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Supporting Data FY 1998/1999 Budget Estimate
Submitted to Congress - February 1997

DESCRIPTIVE SUMMARIES OF THE



**RESEARCH, DEVELOPMENT, TEST AND EVALUATION
Army Appropriation, Budget Activities 4 and 5**

Department of the Army
Office of the Secretary of the Army (Financial Management and Comptroller)

"READINESS THROUGH MODERNIZATION"

VOLUME II

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**DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS
OF THE
RESEARCH, DEVELOPMENT, TEST AND
EVALUATION, ARMY
FY 1998/1999
FEBRUARY 1997**

**VOLUME II
Budget Activities 4 and 5**

**Department of the Army
Office of the Assistant Secretary of the Army (Financial Management and Comptroller)**

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ii

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FY 1998/1999 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

1. **General.** This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Budget Item Justification Sheet) and R-3 (RDT&E Program Element/Project Cost Breakdown) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1996, 1997, 1998 and 1999 time period.
2. **Relationship of the FY 1998/1999 Budget Submission to the FY 1997 Budget submitted to Congress.** This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

A. **Program Element Restructures.** Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0601102A/S16	Science Base/Combat Casualty Care Research	0601102A/S14
0602618A/H81, 0603004A/43A	Liquid Propellant Technology Program	0602618A/H37
0602624A/H28	Fuze Technology	0602624A/H36
0602712A/H24	Camouflage Technology	0602712A/H35
0602785A/791	Personnel System/Performance Technology	0602785A/790
0602787A/825	Combat Casualty Care Technology	0602787A/874
0603001A/XXA	Force XXI Land Warrior	0603001A/J50
0603003A/D368	Improved Cargo Helicopter	0203744A/D430
0603004A/L95	Landmine Warfare Dev	0603004A/43A
0603007A/793	Training Sys and Education	0603007A/792
0603313A/D380	Guided MLRS	0603778A/D784
0604760A/DC77	Computer Generated Forces	0604760A/DC78
0605601A/DE90, DE91, DE92, DE93, D618, D632 & D630	Army Test Ranges and Facilities	0605601A/DF30

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A. Program Element Restructures (continued).

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0605601A/D630	Non-Major System Test & Design Evaluation	0605601A/D699
0605641A/D670, D671, D672, D672, D675 & D678	Survivability Evaluation	0605604A/D734
0605706A/D026	Major Systems Test, Design and Evaluation	0605706A/M542
0303142A/D384 & /D386	Automated Communications Manage- ment System	0303142A/D559

B. FY 1998 Developmental Transitions.

FROM PE/PROJECT	PROJECT TITLE	TO PE/PROJECT
0602120A/AH15	Dismounted Soldier Combat Identification (CID)	0604817A/D902
0602303A/214	2.75" Anti-Air Tech Demo	0603313A/549
0603313A/387	Multi-Purpose Individual Munition	0604802A/284

C. Establishment of New FY 1998 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 1998, in addition to Congressionally directed initiatives for FY 1997, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1998 or were previously funded from other Defense appropriations.

TITLE	PE/PROJECT
Voice Instructional Device*	0602601A/AH39
Plasma Energy Pyrolysis System*	0602720A/A876
Western Environmental Technology Office (WETO) Environmental Support*	0602720A/A877
Neurotoxin Exposure Treatment*	0602787A/A838
Cancer Signal/Cancer Cell Proliferation*	0602787A/A839
Computer-Assisted Minimally Invasive Surgery*	0602787A/A841
ENT Minimally Invasive Simulation*	0602787A/A842

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C. Establishment of New FY 1998 Program Elements/Projects (continued).

<u>TITLE</u>	<u>PE/PROJECT</u>
Health Technology Roadmaps*	0602787A/A843
Hepatitis A Vaccine*	0602787A/A844
Trichloromelamine*	0603002A/D813
Neurofibromatosis*	0603002A/D814
National Medical Testbed*	0603002A/D815
Computer-Based Decision Support Systems*	0603002A/D816
Computer-Aided Diagnostic Research*	0603002A/D817
Advanced Cancer Detection Center*	0603002A/D818
Nautilus/THEL*	0603308A/D989
Battle Integration Center*	0603308A/D997
LCPK for 2.75 Inch Rockets	0603313A/A567
Advanced Light Anti-Armor Weapon System (ALAWS)*	0603607A/D664
Future Combat System	0603645A/DQ19
LTASS	0603774AD598
Future Scout Vehicle - Advanced Development*	0603645A/D018
Suite of Integrated Infrared Countermeasures Op Test*	0604270A/D2VT
Arm Treatment & Transport Vehicle	0604640A/DG28
Future Scout Vehicle - EMD	0604645A/D022
Mounted Warrior*	0604713A/D680
XM982*	0604802A/D695
Army Systems Engineering & Warfighting Technical Spt*	0604805A/D589
Modernization of Utilities*	0605678A/M744
Survivability Evaluation	0605604A/D734
Ground Combat Vehicle HTI*	0203735A/D718
Bradley A3 P3I (BFV A4)	0203735A/D377
Guardrail Common Sensor	0203744A/D028
UH-60 Door Gun*	0203744A/D504
Force XXI Initiatives*	0203758A/D376
Longbow Hellfire PIP	0203802A/D785
Joint Precision Approach Landing System (JPALS)	0305114A/D711
MLRS Army Technical Architecture*	0603778A/D093
Weapons Systems Modernization Software Maintenance	0708045A/DE26

V

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D. FY 1998 programs for which funding was shown in the FY 1997 President's Budget Submit (February 1996), but which are no longer funded.

PE/PROJECT	TITLE	BRIEF EXPLANATION
0203735A/D2UT	Abrams IOTE	Funds transferred to system line.
0601101A/91E	ILIR-ARI	Program terminated
0601102A/S16	Science Base/Combat Dentistry Research	Program terminated
0602120A/H25	Nuc Effects Surv Tech	Program terminated
0602624A/H23	Non-Lethal Weapons Technology	Program terminated
0602783A/094	Tactical Software Technology	Program terminated
0603627A/E79	Smoke, Obscurant - Advanced Development	Funds transferred to system line
0602787A/825	Combat Maxillofacial Injury	Program terminated
0603001A/594	Metrology & Calibration	Program terminated
0603001A/J28	Test Measurement Technology Development	Program terminated

Descriptive summaries for PE 0603806A - NBC Defense Systems, AD and PE 0604806A - NBC Defense Systems, ED are not provided in this Army submission. Since these programs were transferred to Defense RDT&E in FY 1996, program details are available in the Defense RDT&E submission under PE 0603884BP and PE 0604384BP.

3. Classification. This document contains no classified data. Classified/Special Access Programs which are submitted offline are listed below.

0203735A/DC64	0603003A/DB38/D391	0603710A/DC63
0203806A	0603005A/DC62	0603851A
0203808A	0603009A	0603854A/DC68
0602601A/AC84/DC83	0603013A	0604649A/DG15
0602104A	0603017A	0604328A/DC71
0602122A	0603018A	
0602712A/AC61	0603020A	
0602786A/AC60	0603322A	

Department of the Army
FY 1998/1999 RDT&E Program

Summary	Date: Feb 1997			
	Thousands of Dollars			
	FY 1996	FY 1997	FY 1998	FY 1999
Summary Recap of Budget Activities				
Basic Research	181,722	179,059	198,854	210,349
Applied Research	450,837	551,558	462,935	493,665
Advanced Technology Development	580,033	677,676	418,322	431,696
Demonstration and Validation	454,454	558,250	523,395	445,831
Engineering and Manufacturing Development	1,124,738	1,141,159	1,107,393	1,162,925
RDT&E Management Support	1,234,657	1,072,165	1,136,576	1,108,382
Operational Systems Development	730,971	750,761	663,368	643,876
Total Research Development Test & Eval Army	4,757,412	4,930,628	4,510,843	4,496,724
Summary Recap of FYDP Programs				
Strategic Forces	4,000	26,376	86,193	134,298
General Purpose Forces	560,107	541,129	403,355	354,129
Intelligence and Communications	64,814	72,633	89,316	68,413
Research and Development (FYDP Program 6)	4,094,970	4,242,671	3,874,153	3,874,693
Central Supply and Maintenance	23,699	47,819	44,326	50,086
Administration and Assoc Activities	322	0	0	0
Support of Other Nations	9,500	0	13,500	15,105
Total Research Development Test & Eval Army	4,757,412	4,930,628	4,510,843	4,496,724

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viii

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Department of the Army
FY 1998/1999 RDT&E Program

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1997

Program					Thousands of Dollars			
Line Element				Act	FY 1996	FY 1997	FY 1998	FY 1999
No	Number	Item						
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH		1	13,657	14,393	15,113	15,828
2	0601102A	DEFENSE RESEARCH SCIENCES		1	121,822	119,739	138,165	141,555
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS		1	46,243	44,927	45,576	52,966
Basic Research					181,722	179,059	198,854	210,349
4	0602104A	TRACTOR ROSE		2	2,484	3,065	0	0
5	0602105A	MATERIALS TECHNOLOGY		2	9,858	14,530	9,811	10,979
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY		2	26,675	19,351	19,294	19,682
7	0602122A	TRACTOR HIP		2	5,603	7,981	7,242	8,170
8	0602211A	AVIATION TECHNOLOGY		2	17,853	21,898	27,282	30,281
9	0602270A	EW TECHNOLOGY		2	14,651	15,510	16,528	18,151
10	0602303A	MISSILE TECHNOLOGY		2	17,535	29,144	22,335	24,002
11	0602308A	MODELING & SIMULATION TECHNOLOGY		2	19,466	20,652	21,059	24,287
12	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY		2	35,040	34,312	33,112	33,360
13	0602618A	BALLISTICS TECHNOLOGY		2	34,647	39,913	33,317	37,598
14	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG		2	1,728	2,259	4,739	6,691
15	0602623A	JOINT SERVICE SMALL ARMS PROGRAM		2	4,857	4,497	4,786	5,204
16	0602324A	WEAPONS AND MUNITIONS TECHNOLOGY		2	24,297	22,246	26,980	30,613
17	0602705A	ELECTRONICS AND ELECTRONIC DEVICES		2	21,134	24,351	20,192	22,374
18	0602709A	NIGHT VISION TECHNOLOGY		2	16,442	16,636	17,304	19,213
19	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT		2	0	7,372	10,598	10,715
20	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY		2	15,445	15,968	14,256	15,626
21	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY		2	25,537	55,178	17,519	13,869
22	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY		2	13,130	14,976	16,838	18,180
23	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY		2	3,843	6,500	679	337
24	0602784A	MILITARY ENGINEERING TECHNOLOGY		2	33,734	38,060	36,422	40,112
25	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY		2	7,254	9,329	9,014	9,019
26	0602786A	LOGISTICS TECHNOLOGY		2	26,995	21,319	17,689	18,565
27	0602787A	MEDICAL TECHNOLOGY		2	70,575	104,332	74,684	75,307
28	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY		2	2,054	2,179	1,255	1,330
Applied Research					450,837	551,558	462,935	493,665

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Line Element	No	Number	Item	Act	Thousands of Dollars		
					FY 1996	FY 1997	FY 1998
							FY 1999
	29	0603001A	LOGISTICS ADVANCED TECHNOLOGY	3	38,820	22,724	35,469
	30	0603002A	MEDICAL ADVANCED TECHNOLOGY	3	90,591	201,198	10,677
	31	0603003A	AVIATION ADVANCED TECHNOLOGY	3	48,320	56,165	31,330
	32	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	29,119	29,122	18,255
	33	0603005A	COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	26,363	28,811	32,685
	34	0603006A	COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	29,323	29,379	19,688
	35	0603007A	MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	4,576	4,406	3,003
	36	0603009A	TRACTOR HIKE	3	23,016	16,791	14,350
	37	0603013A	TRACTOR DIRT	3	1,713	3,265	3,393
	38	0603017A	TRACTOR RED	3	5,369	8,445	5,572
	39	0603020A	TRACTOR ROSE	3	4,731	4,971	9,204
	40	0603105A	MILITARY HIV RESEARCH	3	2,795	17,544	2,713
	41	0603238A	Global Surveillance/Air Defense/Precision Strike Technology Demo	3	37,630	22,009	11,664
	42	0603270A	EW TECHNOLOGY	3	3,818	6,651	8,182
	43	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	109,972	99,819	117,139
	44	0603322A	TRACTOR CAGE	3	8,088	8,651	6,412
	45	0603606A	LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	25,006	27,629	19,332
	46	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	3	4,516	9,049	4,754
	47	0603654A	LINE-OF-SIGHT TECHNOLOGY DEMO	3	13,396	9,791	13,000
	48	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	3	31,142	29,761	19,299
	49	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	14,544	20,213	12,231
	50	0603772A	ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	27,185	21,282	19,970
			Advanced Technology Development		580,033	677,676	418,322
	51	0603018A	TRACTOR TREAD	4	14,158	2,329	0
	52	0603308A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	23,443	66,462	24,138
	53	0603619A	LANDMINE WARFARE AND BARRIER - ADV DEV	4	35,768	27,860	18,882
	54	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-AD	4	2,623	6,246	0
	55	0603639A	ARMAMENT ENHANCEMENT INITIATIVE	4	58,227	63,240	40,313
	56	0603640A	ARTILLERY PROPELLANT DEVELOPMENT	4	20,811	8,322	8,521
	57	0603645A	ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVE	4	181,647	7,803	2,007

x

Department of the Army
FY 1998/1999 RDT&E Program

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1997

Line Element	Program	No	Number	Item	Act	Thousands of Dollars			
						FY 1996	FY 1997	FY 1998	FY 1999
58	0603649A			ENGINEER MOB EQUIP ADVANCED DEV	4	13,591	0	0	0
59	0603653A			ADVANCED TANK ARMAMENT SYSTEM	4	9,335	11,395	8,982	8,928
60	0603713A			ARMY DATA DISTRIBUTION SYTEM	4	6,360	23,170	21,214	10,049
61	0603745A			TACTICAL ELECTRONIC SUPPORT SYSTEMS - ADV DEV	4	5,630	3,941	0	0
62	0603747A			SOLDIER SUPPORT AND SURVIVABILITY	4	6,709	6,541	7,557	7,680
63	0603766A			TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	26,796	25,354	20,920	23,714
64	0603774A			NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	3,167	2,769	2,939	2,893
65	0603790A			NATO RESEARCH AND DEVELOPMENT (H)	4	0	9,755	13,168	11,169
66	0603801A			AVIATION - ADV DEV	4	12,893	13,104	7,132	7,450
67	0603802A			WEAPONS AND MUNITIONS - ADV DEV	4	949	0	0	0
68	0603804A			LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	5,587	7,433	6,783	6,833
69	0603805A			CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	13,228	12,689	7,673	7,783
70	0603807A			MEDICAL SYSTEMS - ADV DEV	4	9,878	9,996	6,765	8,700
71	0603851A			TRACTOR CAGE (Dem/Val)	4	3,234	3,001	1,948	1,627
72	0603854A			ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	0	238,590	324,380	294,495
73	0603856A			SCAMP BLOCK II (SPACE)	4	0	8,250	73	9,669
74	0603889A			COUNTERDRUG R&D PROJECTS	4	420	0	0	0
	Demonstration and Validation					454,454	558,250	523,395	445,831
75	0604201A			AIRCRAFT AVIONICS	5	20,073	14,694	21,669	12,729
76	0604220A			ARMED, DEPLOYABLE OH-58D	5	688	1,130	0	0
77	0604223A			COMANCHE	5	284,131	331,424	282,009	371,927
78	0604270A			EW DEVELOPMENT	5	62,250	73,886	66,212	51,490
79	0604321A			ALL SOURCE ANALYSIS SYSTEM	5	49,912	39,308	24,045	26,228
80	0604325A			FOLLOW-ON TO TOW	5	944	5,479	13,949	50,884
81	0604328A			TRACTOR CAGE	5	0	1,524	11	303
82	0604604A			MEDIUM TACTICAL VEHICLES	5	2,923	5,874	3,729	0
83	0604609A			SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	1,915	0	0	703
84	0604611A			JAVELIN (AWWS-M)	5	2,249	6,014	8,018	5,277
85	0604619A			LANDMINE WARFARE	5	29,453	26,288	19,800	23,075
86	0604622A			FAMILY OF HEAVY TACTICAL VEHICLES	5	2,605	1,958	0	0

xi

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Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1997

Line Element	Program	No	Number	Item	Act	Thousands of Dollars			
						FY 1996	FY 1997	FY 1998	FY 1999
87	0604633A			AIR TRAFFIC CONTROL	5	5,073	7,377	1,705	1,729
88	0604640A			ADVANCED COMMAND AND CONTROL VEHICLE	5	17,306	7,734	8,867	0
89	0604641A			TACTICAL UNMANNED GROUND VEHICLE	5	0	2,823	2,687	2,663
90	0604642A			LIGHT TACTICLE WHEELED VEHICLE	5	3,970	2,937	9,909	39,919
91	0604645A			ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	32,425	6,585	0	0
92	0604649A			ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	19,114	46,705	56,196	63,069
93	0604710A			NIGHT VISION SYSTEMS - ENG DEV	5	37,658	34,870	33,456	21,255
94	0604713A			COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	16,049	76,428	55,964	43,539
95	0604715A			NON-SYSTEM TRAINING DEVICES - ENG DEV	5	50,140	48,788	76,749	73,048
96	0604716A			TERRAIN INFORMATION - ENG DEV	5	8,509	7,144	2,942	2,686
97	0604726A			INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	0	1,946	1,931
98	0604739A			JTT/CIBS-M (TIARA)	5	0	4,765	4,499	4,447
99	0604740A			TACTICAL SURVEILLANCE SYSTEM - ENG DEV	5	2,954	0	0	0
100	0604741A			AIR DEFENSE C2I - ENG DEV	5	21,810	20,031	18,350	6,698
101	0604746A			AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	10,648	9,575	2,582	2,533
102	0604760A			DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	0	15,631	20,895	9,242
103	0604766A			TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	23,266	15,235	19,113	19,531
104	0604768A			BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	190,472	161,816	202,302	129,466
105	0604770A			JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	15,302	9,624	6,940	5,670
106	0604778A			POSITIONING SYS DEVEL (SPACE)	5	436	428	419	409
107	0604780A			COMBINED ARMS TACTICAL TRAINER (CATT)	5	56,282	26,110	2,823	2,866
108	0604801A			AVIATION - ENG DEV	5	4,885	5,403	5,109	6,067
109	0604802A			WEAPONS AND MUNITIONS - ENG DEV	5	14,845	23,661	3,577	24,865
110	0604804A			LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,132	19,903	28,039	26,932
111	0604805A			COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	16,740	9,556	11,052	16,395
112	0604807A			MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,644	4,693	4,483	5,408
113	0604808A			LANDMINE WARFARE/BARRIER - ENG DEV	5	6,802	7,556	22,605	44,133
114	0604814A			SENSE AND DESTROY ARMOR - ENG DEV	5	15,764	9,934	22,372	20,813
115	0604816A			LONGBOW	5	21,969	10,644	0	0
116	0604817A			COMBAT IDENTIFICATION	5	23,669	16,411	19,784	13,379
117	0604818A			ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	27,231	15,780	20,022	18,697
118	0604820A			RADAR DEVELOPMENT	5	500	0	0	0

xii

UNCLASSIFIED

Department of the Army
FY 1998/1999 RDT&E Program

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Program		Thousands of Dollars			
Line	Element	Act	FY 1996	FY 1997	FY 1998 FY 1999
No	Number Item				
119	0604823A FIREFINDER	5	0	2,496	2,564 12,022
120	0604854A ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	2,937	0 897
	Engineering and Manufacturing Development		1,124,738	1,141,159	1,107,393 1,162,925
121	0604256A THREAT SIMULATOR DEVELOPMENT	6	13,705	11,383	14,004 11,877
122	0604258A TARGET SYSTEMS DEVELOPMENT	6	13,557	9,916	11,688 13,063
123	0604759A MAJOR TEST & EVALUATION INVESTMENT	6	62,154	40,833	40,449 33,407
124	0605103A RAND ARROYO CENTER	6	17,895	21,108	17,576 18,040
125	0605301A ARMY KWAJALEIN ATOLL	6	140,930	143,789	138,769 142,125
126	0605502A SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	85,919	0	0
127	0605601A ARMY TEST RANGES AND FACILITIES	6	142,694	130,222	122,117 128,919
128	0605602A ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	25,422	21,944	33,184 32,976
129	0605604A SURVIVABILITY/LETHALITY ANALYSIS	6	32,250	30,675	32,330 30,678
130	0605605A DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	33,231	29,974	14,952 14,976
131	0605606A AIRCRAFT CERTIFICATION	6	2,821	2,840	2,919 2,924
132	0605702A METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,458	6,348	6,434 6,658
133	0605706A MATERIEL SYSTEMS ANALYSIS	6	17,241	14,126	29,707 28,675
134	0605709A EXPLOITATION OF FOREIGN ITEMS	6	8,413	7,193	7,762 4,349
135	0605712A SUPPORT OF OPERATIONAL TESTING	6	41,078	49,614	81,672 68,949
136	0605801A PROGRAMWIDE ACTIVITIES	6	64,859	59,708	86,208 85,604
137	0605802A INTERNATIONAL COOPERATIVE RESEARCH AND DEV	6	1,555	1,534	1,581 1,581
138	0605803A TECHNICAL INFORMATION ACTIVITIES	6	13,549	16,552	15,451 15,872
139	0605805A MUNITIONS STANDARDZION EFFECTIVENESS & SAFETY	6	16,692	3,211	6,317 5,895
140	0605853A ENVIRONMENTAL CONSERVATION	6	2,493	1,723	1,778 2,977
141	0605854A POLLUTION PREVENTION	6	11,004	13,602	5,353 4,681
142	0605856A ENVIRONMENTAL COMPLIANCE-RDT&E	6	65,985	54,251	51,378 47,604
143	0605876A MINOR CONSTRUCTION (RPM) - RDTE	6	6,035	4,229	4,393 4,537
144	0605878A MAINTENANCE AND REPAIR (RPM) - RDTE	6	86,907	68,580	85,119 74,681
145	0605879A REAL PROPERTY SERVICES (RPS)	6	0	90,457	88,945 88,936
146	0605896A BASE OPERATIONS-RDT&E	6	306,481	219,946	231,653 233,633

UNCLASSIFIED

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Line Element	Program Element	No	Number	Item	Act	Thousands of Dollars			
						FY 1996	FY 1997	FY 1998	FY 1999
147	0605898A		6	MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	15,007	18,407	4,837	4,765	
148	0909999A		6	CLOSED ACCOUNT ADJUSTMENT	322	0	0	0	
	RDT&E Management Support				1,234,657	1,072,165	1,136,576	1,108,382	
149	0603778A		7	MLRS PRODUCT IMPROVEMENT PROGRAM	68,851	62,804	26,678	21,845	
150	0102419A		7	AEROSTAT JOINT PROGRAM	4,000	26,376	86,193	134,298	
151	0203726A		7	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	36,973	38,512	39,039	34,939	
152	0203735A		7	COMBAT VEHICLE IMPROVEMENT PROGRAMS	206,625	206,816	136,520	69,443	
153	0203740A		7	MANEUVER CONTROL SYSTEM	48,302	27,888	25,641	23,932	
154	0203744A		7	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	4,288	22,386	2,609	28,791	
155	0203752A		7	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRA	3,703	3,834	2,940	2,933	
156	0203758A		7	DIGITIZATION	110,583	137,078	156,960	149,015	
157	0203801A		7	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	59,199	64,557	17,412	11,431	
158	0203802A		7	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	64,920	9,874	1,255	17,011	
159	0203806A		7	TRACTOR RUT	3,346	3,112	2,111	0	
160	0203808A		7	TRACTOR CARD	9,521	6,766	6,690	6,693	
161	0208010A		7	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	12,647	18,229	8,983	9,941	
162	0208053A		7	JOINT TACTICAL GRD STATION (TIARA)	0	2,077	3,195	0	
163	0301359A		7	SPECIAL ARMY PROGRAM	8,538	10,185	5,547	4,551	
164	0303140A		7	COMMUNICATIONS SECURITY (COMSEC) EQUIPMENT	3,455	3,161	9,647	3,826	
165	0303142A		7	SATCOM GROUND ENVIRO (SPACE)	52,821	39,421	57,827	44,288	
166	0303150A		7	ARMY GLOBAL C2 SYS	0	19,389	15,045	14,793	
167	0305114A		7	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	0	0	750	0	
168	0305128A		7	SECURITY AND INTELLIGENCE ACTIVITIES	0	477	500	955	
169	0708045A		7	End Item Industrial Preparedness Activities	23,699	47,819	44,326	50,086	
170	1001018A		7	NATO JSTARS - TIARA	9,500	0	13,500	15,105	
	Operational Systems Development				730,971	750,761	663,368	643,876	
Total	Research Development Test & Eval Army				4,757,412	4,930,628	4,510,843	4,496,724	

UNCLASSIFIED

FY97 COLUMN OF FY98/99 PRES BUD

The spreadsheet below reflects the FY97 column of the FY98/99 President's Budget by project. It is provided as clarification to the attached descriptive summaries. In the Project Change Summary (paragraph B of Exhibit R-2), we have reflected the FY97 Appropriated Value as the amount Congress appropriated less undistributed reductions in Sections 8136, 8138, and 8037 (column G of spreadsheet). This methodology is consistent with past practices and is consistent throughout this submission. However, we just recently realized that we should have shown the amount appropriated prior to any reductions (column A), and the total of those reductions (column F) as Adjustments to Appropriated Value. Unfortunately, time did not allow us to change over 400 descriptive summaries before the deadline for this submission. We intend to use this methodology for all future submissions.

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
1	61101	91A	9893	-198	-9			-207	9686
1	61101	91C	3910	-78	-4			-82	3828
1	61101	91D	768	-15	-1			-16	752
1	61101	91E	130	-3	0			-3	127
			14701	-294	-14	0	0	-308	14393
1	61102	305	1156	-23	-1			-24	1132
1	61102	31B	2281	-46	-2			-48	2233
1	61102	52C	2243	-45	-2			-47	2196
1	61102	53A	3605	-72	-3			-75	3530
1	61102	74A	2303	-46	-2			-48	2255
1	61102	74F	2462	-49	-2			-51	2411
1	61102	F20	2333	-47	-2			-49	2284
1	61102	F22	447	-9	0			-9	438
1	61102	H42	1775	-35	-2			-37	1738
1	61102	H43	5584	-112	-6			-118	5466
1	61102	H44	3354	-67	-3			-70	3284
1	61102	H45	1848	-37	-2			-39	1809
1	61102	H47	2811	-56	-4			-60	2751
1	61102	H48	6872	-137	-6			-143	6729
1	61102	H52	849	-17	-1			-18	831
1	61102	H57	47844	-957	-45	-22	-8	-1032	46812
1	61102	H66	1314	-26	-1			-27	1287
1	61102	H67	4901	-98	-5			-103	4798
1	61102	H68	350	-7	0			-7	343
1	61102	S04	598	-12	-1			-13	585
1	61102	S13	8430	-169	-8			-177	8253
1	61102	S14	3830	-77	-4			-81	3749
1	61102	S15	5661	-113	-5			-118	5543
1	61102	S16	468	-9	0			-9	459

xv

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

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UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
2	62211	47A	19640	-393	-18		-16	-427	19213
2	62211	47B	2743	-55	-3			-58	2685
			22383	-448	-21	0	-16	-485	21898
2	62270	442	8783	-176	-8			-184	8599
2	62270	906	7062	-141	-7	-3		-151	6911
			15845	-317	-15	-3	0	-335	15510
2	62303	214	25795	-516	-24		-27	-567	25228
2	62303	205	4000	-80	-4			-84	3916
			29795	-596	-28	0	-27	-651	29144
2	62308	C90	9516	-190	-9	-19		-218	9298
2	62308	C99	11618	-232	-11	-21		-264	11354
			21134	-422	-20	-40	0	-482	20652
2	62601	C05	5982	-120	-6		-2	-128	5854
2	62601	H39	2100	-42	-2			-44	2056
2	62601	H77	10544	-211	-10		-5	-226	10318
2	62601	H82	3090	-62	-3			-65	3025
2	62601	H91	13384	-268	-13	-5	-39	-325	13059
			35100	-703	-34	-5	-46	-788	34312
2	62618	H75	8007	-160	-8			-168	7839
2	62618	H37	7500	-150	-7			-157	7343
2	62618	H80	20762	-415	-19			-434	20328
2	62618	H81	4497	-90	-4			-94	4403
			40766	-815	-38	0	0	-853	39913
2	62622	552	2343	-47	-2	-34	-1	-84	2259
			2343	-47	-2	-34	-1	-84	2259
2	62623	H21	4593	-92	-4	0	0	-96	4497
			4593	-92	-4	0	0	-96	4497

xvii

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
2	62624	H18	9484	-190	-9	-9	-3	-211	9273
2	62624	H19	5039	-101	-5			-106	4933
2	62624	H28	8214	-164	-8		-2	-174	8040
			22737	-455	-22	-9	-5	-491	22246
2	62705	H11	6073	-121	-6			-127	5946
2	62705	H94	18799	-376	-18			-394	18405
			24872	-497	-24	0	0	-521	24351
2	62709	H95	16994	-340	-16	-2		-358	16636
			16994	-340	-16	-2	0	-358	16636
2	62712	C61	1359	-27	-1			-28	1331
2	62712	H24	6170	-123	-6			-129	6041
			7529	-150	-7	0	0	-157	7372
2	62716	H70	14072	-281	-13	-13		-307	13765
2	62716	H34	2250	-45	-2			-47	2203
			16322	-326	-15	-13	0	-354	15968
2	62720	048	6072	-121	-6			-127	5945
2	62720	876	7500	-150	-7			-157	7343
2	62720	877	5000	-100	-5			-105	4895
2	62720	822	2000	-40	-2			-42	1958
2	62720	823	5400	-108	-5			-113	5287
2	62720	826	4000	-80	-4			-84	3916
2	62720	829	13170	-263	-12			-275	12895
2	62720	835	3169	-63	-3			-66	3103
2	62720	896	7412	-148	-7			-155	7257
2	62720	F25	2634	-53	-2			-55	2579
			56357	-1126	-53	0	0	-1179	55178
2	62782	779	7265	-145	-7			-152	7113
2	62782	H92	8042	-161	-8	-10		-179	7863
			15307	-306	-15	-10	0	-331	14976

xviii

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

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UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A FY 97 Approp Value	B Sec 8136	C Sec 8138	D FFRDC	E Sec 8037 Consulting Services	F Tot Adj to Approp Value (B+C+D+E)	G FY 97 Column on RDDS (A-F)
2	62789	880	2226	-45	-2	0	0	-47	2179
			2226	-45	-2	0	0	-47	2179
		TOTAL BA 2	584081	-11680	-549	-183	-111	-12523	551558
3	63001	242	1249	-25	-1			-26	1223
3	63001	543	3097	-62	-3			-65	3032
3	63001	594	445	-9	0			-9	436
3	63001	C07	1891	-38	-2			-40	1851
3	63001	J28	251	-5	0			-5	246
3	63001	J50	16277	-326	-15			-341	15936
			23210	-465	-21	0	0	-486	22724
3	63002	806	100000	-2000	-94			-2094	97906
3	63002	810	9228	-185	-9			-194	9034
3	63002	804	45000	-900	-42			-942	44058
3	63002	819	2400	-48	-2			-50	2350
3	63002	893	12000	-240	-11			-251	11749
3	63002	813	500	-10	0			-10	490
3	63002	818	3500	-70	-3			-73	3427
3	63002	817	3000	-60	-3			-63	2937
3	63002	816	6000	-120	-6			-126	5874
3	63002	815	6000	-120	-6			-126	5874
3	63002	887	7500	-150	-7			-157	7343
3	63002	814	8000	-160	-8			-168	7832
3	63002	840	2373	-47	-2			-49	2324
			205501	-4110	-193	0	0	-4303	201198
3	63003	313	3527	-71	-3			-74	3453
3	63003	391	5040	-101	-5			-106	4934
3	63003	436	24647	-493	-23		-109	-625	24022
3	63003	447	7780	-156	-7			-163	7617
3	63003	A38	15000	-300	-14			-314	14686
3	63003	B38	1000	-20	-1			-21	979
3	63003	B97	484	-10	0			-10	474
			57478	-1151	-53	0	-109	-1313	56165

xx

UNCLASSIFIED

UNCLASSIFIED

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
3	63004	232	5772	-115	-5			-120	5652
3	63004	43A	21809	-436	-20			-456	21353
3	63004	L95	2178	-44	-2	-15		-61	2117
			29759	-595	-27	-15	0	-637	29122
3	63005	221	4758	-95	-4			-99	4659
3	63005	440	13507	-270	-13		-123	-406	13101
3	63005	441	4203	-84	-4			-88	4115
3	63005	497	1818	-36	-2			-38	1780
3	63005	502	2000	-40	-2			-42	1958
3	63005	C62	3266	-65	-3			-68	3198
			29552	-590	-28	0	-123	-741	28811
3	63006	247	7427	-149	-7			-156	7271
3	63006	257	11981	-240	-11	-110		-361	11620
3	63006	592	3712	-74	-3			-77	3635
3	63006	596	5000	-100	-5			-105	4895
3	63006	597	2000	-40	-2			-42	1958
			30120	-603	-28	-110	0	-741	29379
3	63007	792	1418	-28	-1			-29	1389
3	63007	793	3082	-62	-3			-65	3017
			4500	-90	-4	0	0	-94	4406
3	63009	B18	17176	-344	-16	-25		-385	16791
			17176	-344	-16	-25	0	-385	16791
3	63013	C25	3335	-67	-3			-70	3265
			3335	-67	-3	0	0	-70	3265
3	63017	B69	8625	-172	-8			-180	8445
			8625	-172	-8	0	0	-180	8445
3	63020	B77	5078	-102	-5			-107	4971
			5078	-102	-5	0	0	-107	4971
3	63105	H29	17919	-358	-17			-375	17544
			17919	-358	-17	0	0	-375	17544

xxi

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
3	63238	177	14446	-289	-14	-22	-124	-449	13997
3	63238	546	8212	-164	-8		-28	-200	8012
			22658	-453	-22	-22	-152	-649	22009
3	63270	K15	2913	-58	-3			-61	2852
3	63270	K16	3881	-78	-4			-82	3799
			6794	-136	-7	0	0	-143	6651
3	63313	206	1	0	0			0	1
3	63313	703	9000	-180	-8			-188	8812
3	63313	263	9745	-195	-9			-204	9541
3	63313	380	13515	-270	-13			-283	13232
3	63313	387	639	-13	-1			-14	625
3	63313	486	7849	-157	-7	-29		-193	7656
3	63313	493	24245	-485	-23			-508	23737
3	63313	496	37042	-741	-35	-18	-34	-828	36214
3	63313	550	1	0	0			0	1
			102037	-2041	-96	-47	-34	-2218	99819
3	63322	B92	8851	-177	-8		-15	-200	8651
			8851	-177	-8	0	-15	-200	8651
3	63606	608	23296	-466	-22	-67	-7	-562	22734
3	63606	624	5000	-100	-5			-105	4895
			28296	-566	-27	-67	-7	-667	27629
3	63607	627	8243	-165	-8			-173	8070
3	63607	664	1000	-20	-1			-21	979
			9243	-185	-9	0	0	-194	9049
3	63654	460	10000	-200	-9	0	0	-209	9791
			10000	-200	-9	0	0	-209	9791
3	63710	C63	2224	-44	-2			-46	2178
3	63710	K70	11425	-228	-11			-239	11186
3	63710	K86	5566	-111	-5			-116	5450
3	63710	K87	11182	-224	-11			-235	10947
			30397	-607	-29	0	0	-636	29761

xxii

UNCLASSIFIED

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UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
4	63713	2QT	3653	-73	-3		-39	-115	3538
4	63713	370	20169	-403	-19		-2	-424	19745
			23822	-476	-22	0	-41	-539	23283
4	63745	535	4025	-80	-4			-84	3941
			4025	-80	-4	0	0	-84	3941
4	63747	610	1946	-39	-2			-41	1905
4	63747	669	3418	-68	-3			-71	3347
4	63747	C09	1316	-26	-1			-27	1289
			6680	-133	-6	0	0	-139	6541
4	63766	907	26060	-521	-24	-17	-144	-706	25354
			26060	-521	-24	-17	-144	-706	25354
4	63774	131	2829	-57	-3			-60	2769
			2829	-57	-3	0	0	-60	2769
4	63790	691	9963	-199	-9			-208	9755
			9963	-199	-9	0	0	-208	9755
4	63801	B32	2228	-45	-2			-47	2181
4	63801	B33	2053	-41	-2			-43	2010
4	63801	B45	9104	-182	-9			-191	8913
			13385	-268	-13	0	0	-281	13104
4	63804	266	1444	-29	-1			-30	1414
4	63804	428	3951	-79	-4			-83	3868
4	63804	G10	132	-3	0			-3	129
4	63804	G11	217	-4	0			-4	213
4	63804	G14	88	-2	0			-2	86
4	63804	K39	869	-17	-1			-18	851
4	63804	K41	891	-18	-1			-19	872
			7592	-152	-7	0	0	-159	7433
4	63805	091	11119	-222	-10	-3		-235	10884
4	63805	246	2021	-40	-2	-61		-103	1918
			13140	-262	-12	-64	0	-338	12802

xxiv

UNCLASSIFIED

ARMY

XXV

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64325	E18	5596	-112	-5			-117	5479
			5596	-112	-5	0	0	-117	5479
5	64328	C71	1561	-31	-1			-37	1524
			1561	-31	-1	0	-5	-37	1524
5	64604	H07	6000	-120	-6			-126	5874
			6000	-120	-6	0	0	-126	5874
5	64611	499	6143	-123	-6			-129	6014
			6143	-123	-6	0	0	-129	6014
5	64619	088	26909	-538	-25	-41	-17	-621	26288
			26909	-538	-25	-41	-17	-621	26288
5	64622	659	2000	-40	-2			-42	1958
			2000	-40	-2	0	0	-42	1958
5	64633	586	7549	-151	-7			-172	7377
			7549	-151	-7	0	-14	-172	7377
5	64640	G27	7899	-158	-7			-165	7734
			7899	-158	-7	0	0	-165	7734
5	64641	E47	2884	-58	-3			-61	2823
			2884	-58	-3	0	0	-61	2823
5	64642	E40	3000	-60	-3			-63	2937
			3000	-60	-3	0	0	-63	2937
5	64645	175	6726	-135	-6			-141	6585
			6726	-135	-6	0	0	-141	6585
5	64649	G25	34837	-697	-33			-735	34102
5	64649	G26	12873	-257	-12			-270	12603
			47710	-954	-45	0	-6	-1005	46705

xxvi

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

EA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64710	L69	18443	-369	-17	-8	-13	-407	18036
5	64710	L70	9482	-190	-9			-199	9283
5	64710	L74	7712	-154	-7			-161	7551
			35637	-713	-33	-8	-13	-767	34870
5	64713	548	809	-16	-1			-17	792
5	64713	667	48917	-978	-46			-1024	47893
5	64713	668	21598	-432	-20			-452	21146
5	64713	C40	1784	-36	-2			-38	1746
5	64713	L40	4955	-99	-5			-104	4851
			78063	-1561	-74	0	0	-1635	76428
5	64715	241	36752	-735	-35	-31		-801	35951
5	64715	396	2781	-56	-3			-59	2722
5	64715	573	10332	-207	-10			-217	10115
			49865	-998	-48	-31	0	-1077	48788
5	64716	579	7369	-147	-7	-50	-21	-225	7144
			7369	-147	-7	-50	-21	-225	7144
5	64739	702	4867	-97	-5			-102	4765
			4867	-97	-5	0	0	-102	4765
5	64741	126	20516	-410	-19	-9	-47	-485	20031
			20516	-410	-19	-9	-47	-485	20031
5	64746	L59	9793	-196	-9	-10	-3	-218	9575
			9793	-196	-9	-10	-3	-218	9575
5	64760	C73	10248	-205	-10			-215	10033
5	64760	C74	2632	-53	-2			-55	2577
5	64760	C77	3086	-62	-3			-65	3021
			15966	-320	-15	0	0	-335	15631
5	64766	909	15758	-315	-15	-136	-57	-523	15235
			15758	-315	-15	-136	-57	-523	15235

xxvii

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
5	64768	2NT	5	0	0			0	5
5	64768	641	68622	-1372	-64			-1436	67186
5	64768	687	19221	-384	-18			-402	18819
5	64768	688	77559	-1551	-73		-129	-1753	75806
			165407	-3307	-155	0	-129	-3591	161816
5	64770	202	9857	-197	-9	-12	-15	-233	9624
			9857	-197	-9	-12	-15	-233	9624
5	64778	168	437	-9	0	0	0	-9	428
			437	-9	0	0	0	-9	428
5	64780	571	26713	-534	-25	-44		-603	26110
			26713	-534	-25	-44	0	-603	26110
5	64801	C45	5518	-110	-5	0		-115	5403
			5518	-110	-5	0	0	-115	5403
5	64802	284	14108	-282	-13			-295	13813
5	64802	AS1	1600	-32	-2			-34	1566
5	64802	531	5176	-104	-5			-109	5067
5	64802	712	3284	-66	-3			-69	3215
			24168	-484	-23	0	0	-507	23661
5	64804	194	2230	-45	-2			-47	2183
5	64804	279	1444	-29	-1			-30	1414
5	64804	429	3261	-65	-3			-68	3193
5	64804	H01	9635	-193	-9			-202	9433
5	64804	H14	88	-2	0			-2	86
5	64804	L39	1677	-34	-2			-36	1641
5	64804	L41	1033	-21	-1			-22	1011
5	64804	L42	962	-19	-1			-20	942
			20330	-408	-19	0	0	-427	19903

xxviii

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
5	64805	097	1715	-34	-2	-19		-55	1660
5	64805	098	569	-11	-1	-15		-27	542
5	64805	282	7031	-141	-7			-148	6883
5	64805	485	481	-10	0			-10	471
			9796	-196	-10	-34	0	-240	9556
5	64807	812	193	-4	0			-4	189
5	64807	832	1695	-34	-2			-36	1659
5	64807	834	884	-18	-1			-19	865
5	64807	849	2022	-40	-2			-42	1980
			4794	-96	-5	0	0	-101	4693
5	64808	016	5499	-110	-5			-115	5384
5	64808	415	2232	-45	-2	-5		-60	2172
			7731	-155	-7	-5		-175	7556
5	64814	2ST	309	-6	0			-9	300
5	64814	644	9840	-197	-9			-206	9634
			10149	-203	-9	0		-215	9934
5	64816	C87	5872	-117	-6			-123	5749
5	64816	C31	5000	-100	-5			-105	4895
			10872	-217	-11	0	0	-228	10644
5	64817	482	13886	-278	-13			-311	13575
5	64817	901	2897	-58	-3			-61	2836
			16783	-336	-16	0		-372	16411
5	64818	323	7784	-156	-7			-163	7621
5	64818	C34	8645	-173	-8	-290		-486	8159
			16429	-329	-15	-290		-649	15780
5	64823	L85	2551	-51	-2			-55	2496
			2551	-51	-2	0		-55	2496

xxix

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
5	64854	509	3000	-60	-3	0	0	-63	2937
			3000	-60	-3	0	0	-63	2937
	TOTAL BA 5		1166826	-23338	-1097	-686	-546	-25667	1141159
6	64256	976	11627	-233	-11	0	0	-244	11383
			11627	-233	-11	0	0	-244	11383
6	64258	238	6706	-134	-6	-2		-142	6564
6	64258	459	3423	-68	-3			-71	3352
			10129	-202	-9	-2	0	-213	9916
6	64759	983	2423	-48	-2			-50	2373
6	64759	984	32197	-644	-30	-19		-693	31504
6	64759	986	7105	-142	-7		0	-149	6956
			41725	-834	-39	-19	0	-892	40833
6	65103	732	21763	-435	-20	-200		-655	21108
			21763	-435	-20	-200	0	-655	21108
6	65301	614	146864	-2937	-138	0		-3075	143789
			146864	-2937	-138	0	0	-3075	143789
6	65502	770	0	0	0	0	0	0	0
6	65502	771	0	0	0	0	0	0	0
6	65502	802	0	0	0	0	0	0	0
6	65502	860	0	0	0	0	0	0	0
6	65502	861	0	0	0	0	0	0	0
6	65502	M40	0	0	0	0	0	0	0
6	65601	618	12826	-257	-12			-269	12557
6	65601	630	4785	-96	-4			-100	4685
6	65601	632	1578	-32	-1			-33	1545
6	65601	E90	17418	-348	-16			-364	17054
6	65601	E91	35172	-703	-33			-736	34436
6	65601	E93	61233	-1225	-58	-5	0	-1288	59945
			133012	-2661	-124	-5	0	-2790	130222

xxx

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	EFDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
6	65602	628	22413	-448	-21	0	0	-469	21944
			22413	-448	-21			-469	21944
6	65604	670	4879	-98	-5			-103	4776
6	65604	671	5818	-116	-5	-10		-131	5687
6	65604	672	3739	-75	-4			-79	3660
6	65604	675	5027	-101	-5			-106	4921
6	65604	677	5337	-107	-5			-112	5225
6	65604	678	5729	-115	-5			-120	5609
6	65604	679	814	-16	-1			-17	797
			31343	-628	-30	-10	0	-668	30675
6	65605	E97	30667	-613	-29	-51		-693	29974
			30667	-613	-29	-51	0	-693	29974
6	65606	092	2905	-58	-3			-65	2840
			2905	-58	-3	0	-4	-65	2840
6	65702	128	6484	-130	-6			-136	6348
			6484	-130	-6	0	0	-136	6348
6	65706	026	4258	-85	-4			-89	4169
6	65706	541	10170	-203	-10			-213	9957
			14428	-288	-14	0	0	-302	14126
6	65709	650	3304	-66	-3			-69	3235
6	65709	C28	4043	-81	-4			-85	3958
			7347	-147	-7	0	0	-154	7193
6	65712	001	21021	-420	-20	-2	-224	-666	20355
6	65712	985	10545	-211	-10			-221	10324
6	65712	987	4396	-88	-4			-92	4304
6	65712	V02	14944	-299	-14			-313	14631
			50906	-1018	-48	-2	-224	-1292	49614

xxx

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
								(B+C+D+E)	(A-F)
6	65854	OPP	546	-11	-1			-12	534
6	65854	1PP	143	-3	0			-3	140
6	65854	5PP	1957	-39	-2			-41	1916
6	65854	7PP	799	-16	-1			-17	782
6	65854	8PP	10449	-209	-10			-219	10230
			13894	-278	-14	0	0	-292	13602
6	65856	0VV	34856	-697	-33			-730	34126
6	65856	1VV	13972	-279	-13			-292	13680
6	65856	4VV	1500	-30	-1			-31	1469
6	65856	5VV	5083	-102	-5			-107	4976
			55411	-1108	-52	0	0	-1160	54251
6	65876	0WW	2766	-55	-3			-58	2708
6	65876	1WW	1062	-21	-1			-22	1040
6	65876	4WW	491	-10	0			-10	481
			4319	-86	-4	0	0	-90	4229
6	65878	0YY	50862	-1017	-48			-1065	49797
6	65878	1YY	15807	-316	-15			-331	15476
6	65878	4YY	3378	-68	-3			-71	3307
			70047	-1401	-66	0	0	-1467	68580
6	65879	0UU	62918	-1258	-59			-1317	61601
6	65879	1UU	24858	-497	-23			-520	24338
6	65879	4UU	4614	-92	-4			-96	4518
			92390	-1847	-86	0	0	-1933	90457
6	65896	0ZZ	148139	-2963	-138			-3101	145038
6	65896	1ZZ	64068	-1281	-60			-1341	62727
6	65896	4ZZ	12442	-249	-12			-261	12181
			224649	-4493	-210	0	0	-4703	219946
6	65898	M65	4801	-96	-5			-101	4700
6	65898	831	14000	-280	-13			-293	13707
			18801	-376	-18	0	0	-394	18407
			1095744	-21916	-1029	-377	-257	-23579	1072165

xxxiii

UNCLASSIFIED

UNCLASSIFIED

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

A	B	C	D	E	F (B+C+D+E)	G (A-F)			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	Sec 8037 FERDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	63778	027	27038	-541	-25		-50	-616	26422
7	63778	050	26324	-526	-25			-551	25773
7	63778	054	10909	-218	-10			-228	10681
			64271	-1285	-60	0	-50	-1395	62876
7	12419	E55	26940	-539	-25			-564	26376
			26940	-539	-25	0	0	-564	26376
7	23726	2ET	4933	-99	-5		-52	-156	4777
7	23726	322	34564	-691	-32	-42	-64	-829	33735
			39497	-790	-37	-42	-116	-985	38512
7	23735	280	3116	-62	-3			-65	3051
7	23735	2TT	2079	-42	-2		-22	-66	2013
7	23735	2UT	1460	-29	-1		-15	-45	1415
7	23735	330	71246	-1425	-67		-5	-1497	69749
7	23735	344	18298	-366	-17		-5	-383	17915
7	23735	371	89635	-1793	-84			-1882	87753
7	23735	718	11900	-238	-11		-9	-249	11651
7	23735	C64	13562	-271	-13	0	-56	-293	13269
			211296	-4226	-198			-4480	206816
7	23740	2HT	3895	-78	-4		-41	-123	3772
7	23740	484	25187	-504	-24	-491	-52	-1071	24116
			29082	-582	-28	-491	-93	-1194	27888
7	23744	430	17914	-358	-17			-375	17539
7	23744	504	250	-5	0			-5	245
7	23744	179	4700	-94	-4			-98	4602
			22864	-457	-21	0	0	-478	22386
7	23752	106	3947	-79	-4		-30	-113	3834
			3947	-79	-4	0	-30	-113	3834
7	23758	374	90180	-1803	-85	-112	-55	-2055	88125
7	23758	376	50000	-1000	-47			-1047	48953
			140180	-2803	-132	-112	-55	-3102	137078

xxxiv

UNCLASSIFIED

UNCLASSIFIED

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

	A	B	C	D	E	F (B+C+D+E)	G (A-F)			
	BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	23801	036		47291	-946	-44		-21	-1011	46280
7	23801	303		18668	-373	-18		-21	-391	18277
				65959	-1319	-62	0		-1402	64557
7	23802	2MT		390	-8	0		-4	-12	378
7	23802	304		4469	-89	-4			-93	4376
7	23802	045		3900	-78	-4			-82	3818
7	23802	336		1340	-27	-1		-10	-38	1302
				10099	-202	-9	0	-14	-225	9874
7	23806	C19		3179	-64	-3			-67	3112
				3179	-64	-3	0	0	-67	3112
7	23808	E11		6933	-139	-7		-21	-167	6766
				6933	-139	-7	0	-21	-167	6766
7	28010	107		18693	-374	-18	-55	-17	-464	18229
				18693	-374	-18	-55	-17	-464	18229
7	28053	635		2124	-42	-2		-3	-47	2077
				2124	-42	-2	0	-3	-47	2077
7	31359	381		9042	-181	-8			-189	8853
7	31359	382		394	-8	0			-8	386
7	31359	H87		1749	-35	-2			-37	1712
				11185	-224	-10	0	0	-234	10951
7	33140	491		2574	-51	-2	-6		-59	2515
7	33140	501		587	-12	-1			-13	574
				3161	-63	-3	-6	0	-72	3089
7	33142	253		17063	-341	-16	-451		-808	16255
7	33142	2PT		142	-3	0		-2	-5	137
7	33142	384		17217	-344	-16	-477	-222	-1059	16158
7	33142	386		1029	-21	-1			-22	1007
7	33142	455		878	-18	-1			-19	859
7	33142	456		4348	-87	-4		-18	-109	4239
				40677	-814	-38	-928	-242	-2022	38655

xxxv

UNCLASSIFIED

UNCLASSIFIED

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A	B	C	D	E	F	G
			FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Sec 8037 Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	33150	C86	19804	-396	-19	0	0	-415	19389
			19804	-396	-19	0	0	-415	19389
7	35128	H12	487	-10	0	0	0	-10	477
			487	-10	0	0	0	-10	477
7	78045	E25	48842	-977	-46	0	0	-1023	47819
			48842	-977	-46	0	0	-1023	47819
TOTAL BA 7			769220	-15385	-722	-1634	-718	-18459	750761
			5062763	-101257	-4757	-3718	-2403	-112135	4930628

xxxvi

UNCLASSIFIED

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#1 - BASIC RESEARCH			
1	0601101A	In-House Laboratory Independent Research	1
2	0601102A	Defense Research Sciences	10
3	0601104A	University and Industry Research Centers	76
#2 - EXPLORATORY DEVELOPMENT			
4	0602105A	Materials Technology	101
5	0602120A	Sensors and Electronic Survivability	104
6	0602211A	Aviation Technology	115
7	0602270A	Electronic Warfare (EW) Technology	124
8	0602303A	Missile Technology	131
9	0602308A	Modeling and Simulation Technology	137
10	0602601A	Combat Vehicle and Automotive Technology	143
11	0602618A	Ballistics Technology	159
12	0602622A	Chemical, Smoke and Equipment Defeating Technology	168
13	0602623A	Joint Service Small Arms Program	170
14	0602624A	Weapons and Munitions Technology	173
15	0602705A	Electronics and Electronic Devices	183
16	0602709A	Night Vision Technology	191
17	0602712A	Countermine Applied Research	194
18	0602716A	Human Factors Engineering Technology	198
19	0602720A	Environmental Quality Technology	205
20	0602782A	Command, Control, Communications Technology	224
21	0602783A	Computer and Software Technology	230
22	0602784A	Military Engineering Technology	235
23	0602785A	Manpower/Personnel/Training Technology	250

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#2 - EXPLORATORY DEVELOPMENT - Continued			
24	0602786A	Logistics Technology	255
25	0602787A	Medical Technology	269
26	0602789A	Army Artificial Intelligence Technology	294
#3 - ADVANCED DEVELOPMENT			
27	0603001A	Logistics Advanced Technology	296
28	0603002A	Medical Advanced Technology	314
29	0603003A	Aviation Advanced Technology	334
30	0603004A	Weapons and Munitions Advanced Technology	346
31	0603005A	Combat Vehicle and Automotive Advanced Technology	355
32	0603006A	Command, Control and Communications Advanced Technology	367
33	0603007A	Manpower, Personnel and Training Advanced Technology	381
34	0603105A	Military Human Immunodeficiency Virus (HIV) Research	386
35	0603238A	Air Defense/Precision Strike Technology	388
36	0603270A	Electronic Warfare (EW) Technology	394
37	0603313A	Missile and Rocket Advanced Technology	399
38	0603606A	Landmine Warfare and Barrier Advanced Technology	427
39	0603607A	Joint Service Small Arms Program	433
40	0603654A	Line-of-Sight Technology Demonstration	437
41	0603710A	Night Vision Advanced Technology	440
42	0603734A	Military Engineering Advanced Technology	447
43	0603772A	Advanced Tactical Computer Science and Sensor Technology	455

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#4 - DEMONSTRATION AND VALIDATION			
44	0603308A	Army Missile Defense Systems Integration	463
45	0603619A	Landmine Warfare and Barrier - Advanced Development	473
46	0603627A	Smoke, Obscurant and Target Defeating System - Advanced Development	482
47	0603640A	Artillery Propellant Development	486
48	0603645A	Armored Systems Modernization - Advanced Development	490
49	0603649A	Engineering Modification Equipment - Advanced Development	506
50	0603653A	Advanced Tank Armament System	510
51	0603713A	Army Data Distribution System	515
52	0603745A	Tactical Electronic Support Systems - Advanced Development (TIARA)	524
53	0603747A	Soldier Support and Survivability	528
54	0603766A	Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)	544
55	0603774A	Night Vision Systems - Advanced Development	549
56	0603790A	NATO Research & Development	554
57	0603801A	Aviation - Advanced Development	565
58	0603802A	Weapons and Munitions - Advanced Development	580
59	0603804A	Logistics and Engineering Equipment - Advanced Development	583
60	0603805A	Combat Service Support Control Systems Evaluation and Analysis	613
61	0603807A	Medical Systems - Advanced Development	622
62	0603854A	Artillery Systems Advanced Development	638
63	0603856A	SCAMP BLK II (SPACE)	644
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT			
64	0604201A	Aircraft Avionics	647
65	0604220A	Armed, Deployable OH-58D	653
66	0604223A	Comanche	656

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued			
67	0604270A	Electronic Warfare (EW) Development	666
68	0604321A	All Source Analysis System (TIARA)	694
69	0604325A	Follow-On To TOW	703
70	0604604A	Medium Tactical Vehicles	706
71	0604609A	Smoke, Obscurant and Target Defeating System - Engineering Development	711
72	0604611A	Javelin	715
73	0604619A	Landmine Warfare	719
74	0604622A	Family of Heavy Tactical Vehicles	723
75	0604633A	Air Traffic Control	730
76	0604640A	Advanced Command and Control Vehicle	735
77	0604641A	Tactical Unmanned Ground Vehicle	739
78	0604642A	Light Tactical Wheeled Vehicle	743
79	0604645A	Armored Systems Modernization (ASM) - Engineering Development	750
80	0604649A	Engineer Mobility Equipment Development	759
81	0604710A	Night Vision Systems - Engineering Development	770
82	0604713A	Combat Feeding, Clothing, and Equipment	785
83	0604715A	Non-System Training Devices - Engineering Development	812
84	0604716A	Terrain Information - Engineering Development (TIARA)	830
85	0604726A	Integrated Meteorological System (IMETS) (TIARA)	835
86	0604739A	JTT/CIBS-M (TIARA)	839
87	0604740A	Tactical Surveillance System - Engineering Development	842
88	0604741A	Air Defense Command, Control, Intelligence - Engineering Development	845
89	0604746A	Automatic Test Equipment Development	852
90	0604760A	Distributive Interactive Simulations - Engineering Development	861
91	0604766A	Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	876

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued			
92	0604768A	Brilliant Anti-Armor (BAT) Submunition	881
93	0604770A	Joint Surveillance/Target Attack Radar System	900
94	0604778A	Positioning Systems Development (SPACE)	909
95	0604780A	Combined Arms Tactical Trainer (CATT)	912
96	0604801A	Aviation - Engineering Development	917
97	0604802A	Weapons and Munitions - Engineering Development	923
98	0604804A	Logistics & Engineer Equipment - Engineering Development	947
99	0604805A	Command, Control, Communications Systems - Engineering Development	990
100	0604807A	Medical Materiel - Engineering Development	1009
101	0604808A	Landmine Warfare/Barrier - Engineering Development	1024
102	0604814A	Sense and Destroy Armor Munition - Engineering Development	1032
103	0604816A	Longbow	1041
104	0604817A	Combat Identification - Engineering & Manufacturing Development	1050
105	0604818A	Army Tactical Command and Control Hardware & Software	1062
106	0604820A	Radar Development	1071
107	0604823A	Firefinder	1074
108	0604854A	Artillery Systems - Engineering Development	1079
#6 - MANAGEMENT SUPPORT			
109	0604256A	Threat Simulator Development	1086
110	0604258A	Target Systems Development	1089
111	0604759A	Major Test and Evaluation Investment	1095
112	0605103A	Rand Arroyo Center	1104
113	0605301A	Army Kwajalein Atoll	1108
114	0605601A	Army Test Ranges and Facilities	1111

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#6 - MANAGEMENT SUPPORT - Continued			
115	0605602A	Army Test Technology and Sustaining Instrumentation	1131
116	0605604A	Survivability/Lethality Analysis	1138
117	0605605A	DOD High Energy Laser System Test Facility (HELSTF)	1158
118	0605606A	Aircraft Certification	1160
119	0605702A	Meteorological Support to Research, Development, Testing & Evaluation Activities	1162
120	0605706A	Matériel Systems Analysis	1165
121	0605709A	Exploitation of Foreign Items	1174
122	0605712A	Support of Operational Testing	1179
123	0605801A	Programwide Activities	1196
124	0605802A	International Cooperative Research and Development	1201
125	0605803A	Technical Information Activities	1203
126	0605805A	Munitions Standardization Effectiveness and Safety	1220
127	0605853A	Environmental Conservation	1230
128	0605854A	Pollution Prevention	1236
129	0605856A	Environmental Compliance - Research, Development, Testing & Evaluation	1246
130	0605876A	Minor Construction - Research, Development, Testing & Evaluation	1254
131	0605878A	Maintenance and Repair - Research, Development, Testing & Evaluation	1261
132	0605879A	Real Property Services (RPS)	1269
133	0605896A	Base Operations - Research, Development, Testing & Evaluation	1276
134	0605898A	Management Headquarters (Research and Development)	1284
#7 - OPERATIONAL SYSTEM DEVELOPMENT			
135	0102419A	Aerostat Joint Program Office	1289
136	0203726A	Advanced Field Artillery Tactical Data System	1294
137	0203735A	Combat Vehicle Improvement Programs	1303

TABLE OF CONTENTS

BA	PE	Program Element Title	PAGE
#7 - OPERATIONAL SYSTEM DEVELOPMENT - Continued			
138	0203740A	Maneuver Control System	1332
139	0203744A	Aircraft Modifications/Product Improvement Program	1345
140	0203752A	Aircraft Engine Component Improvement Program	1357
141	0203758A	Digitization	1362
142	0203801A	Missile/Air Defense Product Improvement Program	1372
143	0203802A	Other Missile Product Improvement Programs	1383
144	0208010A	Joint Tactical Communications Program (TRJ-TAC)	1407
145	0208053A	Joint Tactical Ground System (TIARA)	1411
146	0303140A	Communications Security (COMSEC) Equipment	1414
147	0303142A	Satellite Communications (SATCOM) Ground Environment (SPACE)	1423
148	0303150A	Army Global Command and Control System (AGCCS)	1456
149	0305114A	Joint Precision Approach Landing System (JPALS)	1461
150	0305128A	Security and Intelligence Activities	1464
151	0603778A	Multiple Launch Rocket System Product Improvement Program	1467
152	0708045A	Army Industrial Preparedness Manufacturing Technology	1486
153	1001018A	NATO Joint STARS	1498

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Advanced Command and Control Vehicle	0604640A	735
Advanced Field Artillery Tactical Data System	0203726A	1294
Advanced Tactical Computer Science and Sensor Technology	0603772A	455
Advanced Tank Armament System	0603653A	510
Aerostat Joint Program Office	0102419A	1289
Air Defense Command, Control, Intelligence - Engineering Development	0604741A	845
Air Defense/Precision Strike Technology	0603238A	388
Air Traffic Control	0604633A	730
Aircraft Avionics	0604201A	647
Aircraft Certification	0605606A	1160
Aircraft Engine Component Improvement Program	0203752A	1357
Aircraft Modifications/Product Improvement Program	0203744A	1345
All Source Analysis System (TIARA)	0604321A	694
Armed, Deployable OH-58D	0604220A	653
Armored Systems Modernization (ASM) - Engineering Development	0604645A	750
Armored Systems Modernization - Advanced Development	0603645A	490
Army Artificial Intelligence Technology	0602789A	294
Army Data Distribution System	0603713A	515
Army Global Command and Control System (AGCCS)	0303150A	1456
Army Industrial Preparedness Manufacturing Technology	0708045A	1486
Army Kwajalein Atoll	0605301A	1108
Army Missile Defense Systems Integration	0603308A	463
Army Tactical Command and Control Hardware & Software	0604818A	1062
Army Test Ranges and Facilities	0605601A	1111
Army Test Technology and Sustaining Instrumentation	0605602A	1131

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Artillery Propellant Development	0603640A	486
Artillery Systems - Engineering Development	0604854A	1079
Artillery Systems Advanced Development	0603854A	638
Automatic Test Equipment Development	0604746A	852
Aviation - Advanced Development	0603801A	565
Aviation - Engineering Development	0604801A	917
Aviation Advanced Technology	0603003A	334
Aviation Technology	0602211A	115
Ballistics Technology	0602618A	159
Base Operations - Research, Development, Testing & Evaluation	0605896A	1276
Brilliant Anti-Armor (BAT) Submunition	0604768A	881
Chemical, Smoke and Equipment Defeating Technology	0602622A	168
Comanche	0604223A	656
Combat Feeding, Clothing, and Equipment	0604713A	785
Combat Identification - Engineering & Manufacturing Development	0604817A	1050
Combat Service Support Control Systems Evaluation and Analysis	0603805A	613
Combat Vehicle and Automotive Advanced Technology	0603005A	355
Combat Vehicle and Automotive Technology	0602601A	143
Combat Vehicle Improvement Programs	0203735A	1303
Combined Arms Tactical Trainer (CATT)	0604780A	912
Command, Control and Communications Advanced Technology	0603006A	367
Command, Control, Communications Systems - Engineering Development	0604805A	990
Command, Control, Communications Technology	0602782A	224
Communications Security (COMSEC) Equipment	0303140A	1414
Computer and Software Technology	0602783A	230

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Countermine Applied Research	0602712A	194
Defense Research Sciences	0601102A	10
Digitization	0203758A	1362
Distributive Interactive Simulations - Engineering Development	0604760A	861
DOD High Energy Laser System Test Facility (HELSTF)	0605605A	1158
Electronic Warfare (EW) Technology	0603270A	394
Electronic Warfare (EW) Technology	0602270A	124
Electronic Warfare (EW) Development	0604270A	666
Electronics and Electronic Devices	0602705A	183
Engineer Mobility Equipment Development	0604649A	759
Engineering Modification Equipment - Advanced Development	0603649A	506
Environmental Compliance - Research, Development, Testing & Evaluation	0605856A	1246
Environmental Conservation	0605853A	1230
Environmental Quality Technology	0602720A	205
Exploitation of Foreign Items	0605709A	1174
Family of Heavy Tactical Vehicles	0604622A	723
Firefinder	0604823A	1074
Follow-On To TOW	0604325A	703
Human Factors Engineering Technology	0602716A	198
In-House Laboratory Independent Research	0601101A	1
Integrated Meteorological System (IMETS) (TIARA)	0604726A	835
International Cooperative Research and Development	0605802A	1201
Javelin	0604611A	715
Joint Precision Approach Landing System (JPALS)	0305114A	1461
Joint Service Small Arms Program	0603607A	433

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Joint Service Small Arms Program	0602623A	170
Joint Surveillance/Target Attack Radar System	0604770A	900
Joint Tactical Communications Program (TRI-TAC)	0208010A	1407
Joint Tactical Ground System (TIARA)	0208053A	1411
JTT/CIBS-M (TIARA)	0604739A	839
Landmine Warfare	0604619A	719
Landmine Warfare and Barrier - Advanced Development	0603619A	473
Landmine Warfare and Barrier Advanced Technology	0603606A	427
Landmine Warfare/Barrier - Engineering Development	0604808A	1024
Light Tactical Wheeled Vehicle	0604642A	743
Line-of-Sight Technology Demonstration	0603654A	437
Logistics & Engineer Equipment - Engineering Development	0604804A	947
Logistics Advanced Technology	0603001A	296
Logistics and Engineering Equipment - Advanced Development	0603804A	583
Logistics Technology	0602786A	255
Longbow	0604816A	1041
Maintenance and Repair - Research, Development, Testing & Evaluation	0605878A	1261
Major Test and Evaluation Investment	0604759A	1095
Management Headquarters (Research and Development)	0605898A	1284
Maneuver Control System	0203740A	1332
Manpower, Personnel and Training Advanced Technology	0603007A	381
Manpower/Personnel/Training Technology	0602785A	250
Materials Technology	0602105A	101
Material Systems Analysis	0605706A	1165
Medical Advanced Technology	0603002A	314

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Medical Materiel - Engineering Development	0604807A	1009
Medical Systems - Advanced Development	0603807A	622
Medical Technology	0602787A	269
Medium Tactical Vehicles	0604604A	706
Meteorological Support to Research, Development, Testing & Evaluation Activities	0605702A	1162
Military Engineering Advanced Technology	0603734A	447
Military Engineering Technology	0602784A	235
Military Human Immunodeficiency Virus (HIV) Research	0603105A	386
Minor Construction - Research, Development, Testing & Evaluation	0605876A	1254
Missile and Rocket Advanced Technology	0603313A	399
Missile Technology	0602303A	131
Missile/Air Defense Product Improvement Program	0203801A	1372
Modeling and Simulation Technology	0602308A	137
Multiple Launch Rocket System Product Improvement Program	0603778A	1467
Munitions Standardization Effectiveness and Safety	0605805A	1220
NATO Joint STARS	1001018A	1498
NATO Research & Development	0603790A	554
Night Vision Advanced Technology	0603710A	440
Night Vision Systems - Advanced Development	0603774A	549
Night Vision Systems - Engineering Development	0604710A	770
Night Vision Technology	0602709A	191
Non-System Training Devices - Engineering Development	0604715A	812
Other Missile Product Improvement Programs	0203802A	1383
Pollution Prevention	0605854A	1236
Positioning Systems Development (SPACE)	0604778A	909

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Programwide Activities	0605801A	1196
Radar Development	0604820A	1071
Rand Arroyo Center	0605103A	1104
Real Property Services (RPS)	0605879A	1269
Satellite Communications (SATCOM) Ground Environment (SPACE)	0303142A	1423
SCAMP BLK II (SPACE)	0603856A	644
Security and Intelligence Activities	0305128A	1464
Sense and Destroy Armor Munition - Engineering Development	0604814A	1032
Sensors and Electronic Survivability	0602120A	104
Smoke, Obscurant and Target Defeating System - Advanced Development	0603627A	482
Smoke, Obscurant and Target Defeating System - Engineering Development	0604609A	711
Soldier Support and Survivability	0603747A	528
Support of Operational Testing	0605712A	1179
Survivability/Lethality Analysis	0605604A	1138
Tactical Electronic Support Systems - Advanced Development (TIARA)	0603745A	524
Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)	0603766A	544
Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	0604766A	876
Tactical Surveillance System - Engineering Development	0604740A	842
Tactical Unmanned Ground Vehicle	0604641A	739
Target Systems Development	0604258A	1089
Technical Information Activities	0605803A	1203
Terrain Information - Engineering Development (TIARA)	0604716A	830
Threat Simulator Development	0604256A	1086
University and Industry Research Centers	0601104A	76
Weapons and Munitions - Advanced Development	0603802A	580

ALPHABETICAL LISTING

Program Element Title

PE	PAGE
0604802A	923
0603004A	346
0602624A	173

Weapons and Munitions - Engineering Development

Weapons and Munitions Advanced Technology

Weapons and Munitions Technology

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603308A Army Missile Defense Systems

Integration

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	23443	66462	24138	12637	12623	12599	15637	15855	Continuing	Continuing
D989 Nautilus/THEL	0	44058	16457	0	0	0	0	0	0	60515
D990 Theater Missile Defense (TMD) System Integration	23443	2823	2685	2663	2656	2642	2811	2822	Continuing	Continuing
D997 Battle Integration Center	0	19581	4996	9974	9967	9957	12826	13033	Continuing	Continuing

Mission Description and Budget Item Justification: This program element funds systems analysis, studies, and experimentation designed to validate and integrate the pillars of Theater Missile Defense (TMD): active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. This integration program produces hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures; these inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program element also funds the U.S. Army Space and Strategic Defense Command's Missile Defense Battle Integration Center (MDBIC) which is building a flexible, linked architecture of pre-existing live, virtual and constructive simulations. This distributed interactive simulation (DIS)-based architecture can operate in the regimes of training, exercises and military operations; advanced concepts and requirements; research, development and acquisition by integrating its simulation environment with other simulations and live entities to achieve a low-cost, high fidelity representation of the modern battlefield. In addition, this program element funds the completion of the joint U.S./Israeli Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD). Work in this program element is dedicated to advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of TMD and is appropriately funded in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603308A Army Missile Defense Systems								D989	
		Integration									
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D989 Nautilus/THEL		0	44058	16457	0	0	0	0	0	0	60515
<p>A. Mission Description and Justification: Project D989-Nautilus/THEL: These funds will complete the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD). The THEL ACTD is a joint U.S./Israel program to design, fabricate, and test a tactical-sized THEL demonstrator to evaluate the effectiveness of high energy lasers (HELs) to defeat the threat posed by Katyusha and similar short range artillery rockets. The THEL ACTD is an integration effort that supports the active defense pillar of Theater Missile Defense.</p> <p>Acquisition Strategy: The THEL ACTD has been assigned an urgent priority by the Secretary of Defense. A sole source letter contract was executed with TRW to deliver the THEL demonstrator by 31 March 1998. The letter contract was definitized about 19 January 1997.</p> <p>FY 1996 Accomplishments: FY 1996 funds for this effort provided in PE 0605605A.</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 37981 THEL ACTD design and fabrication. • 1500 System engineering, analysis and subsystem integration activities. • 2400 Program management. • 1100 Government furnished property. • 1077 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. Total 44058 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 12400 Completion of the THEL demonstrator integration and testing at TRW. • 2000 System engineering, analysis and system integration activities. • 2057 Program management. Total 16457 <p>FY 1999 Planned Program: Project not funded in FY 1999</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

D989

Integration

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

0

FY 1997

0

44058

FY 1998

0

FY 1999

0

16457

0

Change Summary Explanation: Funding - FY 1997 (+44058) Congressional increase to support the THEL Demonstrator

FY 1998 funding reprogrammed (+16457) to complete the integration and testing of the THEL demonstrator.

C. Other Program Funding Summary

Nautilus PE 0605605A

THEL PE 0605605A

Nautilus - Israel

THEL - Israel

FY 1996

4747

4747

1700

20000

FY 1997

9500

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

To
ComplTotal
Cost

7247

4747

1700

29500

D. Schedule Profile

Initiate THEL ACTD

Initiate Long Leads & Fabrication

Complete Fabrication/Integration

Complete TRW THEL ACTD Testing

FY 1996

1 2 3

4

X

FY 1997

1 2 3

4

FY 1998

1 2 3

4

FY 1999

1 2 3

4

FY 1999

1 2 3

4

Project D989

Page 3 of 10 Pages

Exhibit R-2 (PE 0603308A)

465

Item 44

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			D989		
4 - Demonstration and Validation		0603308A Army Missile Defense Systems Integration					
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999		
THEL Demonstrator			40581	14400			
Program Management			2400	2057			
SBIR/STTR			1077				
Total			44058	16457			
B. Budget Acquisition History and Planning Information							
Performing Organizations							
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997
Performing Activity	Vehicle	Date	EAC	EAC	FY 1996	FY 1997	FY 1998
Product Development Organizations							
TRW	Letter/Sole	4th Qtr 96	89000	89000		37981	12400
various	Source						
	various	TBD				2600	2000
Support and Management Organizations							
Govt Support and	MIPR	Various	TBD	TBD		2400	2057
Support Contracts	CPFF						
SBIR/STTR						1077	
Test and Evaluation Organizations							
Government Furnished Property: Not applicable							
Subtotal Product Development						40581	14400
Subtotal Support and Management						3477	2057
Subtotal Test and Evaluation							
Total Project						44058	16457

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

Integration

PROJECT

D990

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D990 Theater Missile Defense (TMD) System Integration	23443	2823	2685	2663	2656	2642	2811	2822	Continuing	Continuing

A. Mission Description and Justification: Project D990-TMD System Integration: Funds initiatives directed by U.S. Army Space and Strategic Defense Command (USASSDC) in its capacity as the U.S. Army advocate, integrator, and focal point for TMD operations. USASSDC is empowered by the Department of the Army to serve as the Department level, operational representative for theater missile defense. This program conducts systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. This integration program produces hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures; these inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program supports the milestone decisions for active defense missile and C4I systems, as well as Aviation and Artillery.

Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.

FY 1996 Accomplishments:

- 3532 Conducted systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD.
- 19911 Missile Defense Battle Integration Center funding;
 - Provides upgraded to the Synthetic Theater of War (STOW) combat environment;
 - Completed the development of the Distributed Interactive Simulation (DIS) interface;
 - Provided the STOW environment in all tactical operations centers.

Total 23443

FY 1997 Planned Program:

- 2754 Conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
- 69 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 2823

Project D990

Page 5 of 10 Pages

Exhibit R-2 (PE 0603308A)

467

Item 44

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Demonstration and Validation	0603308A Army Missile Defense Systems Integration	D990	
FY 1998 Planned Program:			
• 2685	Continue to conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.		
Total	2685		
FY 1999 Planned Program:			
• 2663	Continue to conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.		
Total	2663		
B. Project Change Summary			
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998
Appropriated Value	23329	2884	2886
Adjustments to Appropriated Value	23985	2823	2877
FY 1998 Pres Bud Request	-542		
	23443	2823	2685
			2663
C. Other Program Funding Summary: There are no other related RDTE appropriation efforts.			
D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events cannot be provided.			

Project D990

Page 6 of 10 Pages

Exhibit R-2 (PE 0603308A)

468

Item 44

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

PROJECT

D990

Integration

A. Project Cost Breakdown

Program Management Support

SBIR/STTR

Total

FY 1996

23443

FY 1997

2754

69

2823

FY 1998

2685

FY 1999

2663

2663

B. Budget Acquisition History and Planning Information: Not applicable.

Project D990

Page 7 of 10 Pages

Exhibit R-3 (PE 0603308A)

469

Item 44

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT							
4 - Demonstration and Validation		0603308A Army Missile Defense Systems Integration		D997							
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D997	Battle Integration Center	0	19581	4996	9974	9967	9957	12826	13033	Continuing	Continuing
<p>A. Mission Description and Justification: Project D997-Battle Integration Center: The Missile Defense Battle Integration Center (MDBIC) is developing and implementing a synthetic Army battlefield context for integrating missile defense and space assets; supporting requiring activities, materiel developers, and users with distributed, netted computing resources, models, and simulation efforts for warfighter exercise, analytical, and virtual prototyping activities. Provide the warfighter during exercises and deployments with a distributed synthetic battlefield training and planning environment, and with near real-time after action review (AAR) capability. The MDBIC supports the Army and Department of Defense in Cost and Operational Effectiveness Analyses and requirements analyses through the development and operation of an analytical modern battlefield. Enhance materiel development through virtual prototyping and user interface development. The MDBIC's Advanced Concept and Requirements Analysis and Research, Development and Acquisition simulation capabilities support the critical mission areas of Theater Missile Defense, Cruise Missile Defense, National Missile Defense, and Space Operations. The MDBIC's modeling and simulation capabilities interface with other DIS-compatible tools to conduct constructive, virtual and live simulation exercises; model Service and Allies' weapons in realistic scenarios; and develop databases and modeling for weather, tactics, terrain, threat, and advanced weapons integration. These funds will allow further development of the Synthetic Battlefield Environment (SBE) and SBE establishment at exercises, demonstrations, and experiments. In the future, this program will ensure that deploying soldiers will be virtually rehearsed against the force we are facing prior to their deployment. In essence, the American soldier will be a "Virtual Combat Veteran" before he is deployed.</p> <p>Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.</p> <p>FY 1996 Accomplishments: Project not funded in FY 1996</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 4850 Participate in/support Army and joint exercises and warfighting experiments. • 6925 Continue the development of the SBE, including required interfaces, to enhance the realism and fidelity of missile defense training, exercises, and testing. • 2100 Conduct "stand alone" training and further develop AAR capabilities for Force XXI command and control entities and their crews and staffs. • 2928 Continue research and development of advanced models and simulations to perform missile defense studies and analyses, by incorporating existing testbeds and migration to the DOD's High-Level Architecture (HLA). • 2300 Provide modeling, simulation, and advanced visualization capabilities for senior decision makers via the Warfighting Analysis and Integration Center • 478 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. <p>Total 19581</p> <p>Project D997</p>											

Exhibit R-2 (PE 0603308A)

Page 8 of 10 Pages

470

Item 44

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

Integration

PROJECT

D997

FY 1998 Planned Program:

- 3996 Provide a high fidelity, interactive, synthetic battlefield environment as a tool for hands-on training, missile defense integration, utilization in exercises, demonstrations, and Force XXI initiatives, evaluation of battlefield operational issues.
- 500 Develop virtual prototypes of potential battlefield systems.
- 500 Develop long-haul, distributed after action review capabilities.
- Total 4996

FY 1999 Planned Program:

- 5974 Update and provide a high fidelity, interactive, synthetic battlefield environment as a tool for hands on training, missile defense integration, utilization in exercises, demonstrations, Force XXI initiatives, and evaluation of battlefield operational issues.
- 1000 Continue development of virtual prototypes of potential battlefield systems.
- 1000 Implement and utilize long-haul, distributed after action review capabilities.
- 500 Continue migration to DOD high level architecture.
- 1500 Conduct follow-on missile defense and space operation support studies and analyses.
- Total 9974

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

FY 1997

FY 1998

FY 1999

0

0

19581

0

0

19581

4996

9974

Change Summary Explanation: Funding - FY 97 (+19581) Congressional increase to support essential operational and developmental requirements of the MDBIC. FY 98/99 funding adjustments (+4996/+9974) for minimum essential operational and developmental requirements of the MDBIC.

C. Other Program Funding Summary: There are no other related RDTE appropriation efforts.

D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events cannot be provided.

Project D997

Page 9 of 10 Pages

Exhibit R-2 (PE 0603308A)

471

Item 44

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY		PROJECT	
4 - Demonstration and Validation		D997	
PE NUMBER AND TITLE		0603308A Army Missile Defense Systems Integration	
A. <u>Project Cost Breakdown</u>			
MDBIC Operations		FY 1996	FY 1997
SBIR/STTR		19103	4996
Total		478	9974
B. <u>Budget Acquisition History and Planning Information:</u> Not Applicable.			

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -
Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	35768	27860	18882	11214	10609	17564	8600	9800	Continuing	Continuing
D005 Landmine Advanced Development	0	0	3767	4258	4241	0	0	0	0	12266
D606 Countermine/Barrier Advanced Development	35768	27860	15115	6956	6368	17564	8600	9800	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for advanced development of new mine and countermine systems by prototyping modern munitions technology, advanced development sensors, logic networks, fuzes, power sources, warhead components and modules into complete systems. Development of minefield command and control equipment will provide new capabilities in landmine warfare and will move the future Army toward the intelligent minefield. It also provides for the initiation and/or continuation of advanced development of the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS) and for mine neutralization with the Explosive Stand-off Minefield Breacher (ESMB), and Anti-personnel Obstacle Breaching System (APOBS). This program element supports Program Definition and Risk Reduction (PDRR) efforts used to demonstrate and validate general military utility and is, therefore, appropriately placed in Budget Activity 4.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603619A Landmine Warfare and Barrier - Advanced Development								D005	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D005	Landmine Advanced Development	0	0	3767	4258	4241	0	0	0	0	12266
<p>A. Mission Description and Justification: This project will improve the capability of mines used by the United States Army and will move the future Army toward the intelligent minefield.</p> <p>Acquisition Strategy: Intelligent Minefield (IMF) - competitive DEM/VAL contract followed by sole source EMD and initial production.</p> <p>FY 1996 Accomplishments: Project not funded in FY 96</p> <p>FY 1997 Planned Program: Project not funded in FY 97</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1100 Conduct interoperability study, trade-off analysis, system integration/analyses, and evaluate methods for Identification, Friend or Foe (IFF). 1315 Initiate design and development of gateway, advanced acoustic sensor, and control station. 1000 Initiate software algorithm development. 352 Test and evaluation. Total 3767 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 1299 Continue design and development of gateway, advanced acoustic sensor, and control station. 963 Continue software algorithm development. 850 Fabricate components for test and evaluation. 500 Conduct gateway, sensor and control station test and evaluation. 646 System integration and analysis. Total 4258 											

Project D005

Page 2 of 9 Pages

Exhibit R-2 (PE 0603619A)

474

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		D005	
4 - Demonstration and Validation		0603619A Landmine Warfare and Barrier - Advanced Development			
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development				2215	2105
Test and Evaluation				352	1100
Government Engineering Support				813	853
Government Program Management				387	200
Total				3767	4258
B. Budget Acquisition History and Planning Information		Not Applicable			

Project D005

Page 4 of 9 Pages

Exhibit R-3 (PE 0603619A)

476

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -

D606

Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D606 Countermine/Barrier Advanced Development	35768	27860	15115	6956	6368	17564	8600	9800	Continuing	Continuing

A. Mission Description and Justification: This project provides for advanced development of new countermine systems by prototyping advanced sensors for evaluation of neutralizing, clearing, breaching and detection concepts which will enhance the U.S. capability in countermine warfare. The program includes the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS), Explosive Stand-off Minefield Breacher (ESMB), Anti-personnel Obstacle Breaching System (APOBS), and Off-Route Smart Mine Clearance (ORSMC). The program provides for proof-of-principle for these systems.

Acquisition Strategy: ASTAMIDS and HSTAMIDS - Sole source production contracts to be awarded at the conclusion of EMD to the winner of a competitive PDRR phase. PDRR phase consists of two competing contracts; ESMB - Competitive development contracts followed by award of a sole source production contract.

FY 1996 Accomplishments:

- 12485 Conducted system design and Preliminary Design Reviews for ESMB.
- 4479 Initiated Advanced Development design for HSTAMIDS.
- 10796 Completed ASTAMIDS development/fabrication of prototype.
- 3700 Conducted technical and Early User Tests of ASTAMIDS.
- 3644 Initiated effort to field ASTAMIDS prototype for Bosnia
- 350 Initiated effort to field HSTAMIDS prototypes for Bosnia
- 314 Completed Test and evaluation of APOBS fixes
- Total 35768

FY 1997 Planned Program:

- 5572 Complete technical test and evaluation for ESMB.
- 750 Conduct Milestone II Review for ESMB.
- 9342 Develop HSTAMIDS prototype
- 7500 Complete development design and fabricate prototype/test hardware for ASTAMIDS
- 1016 Conduct technical and early user tests for ASTAMIDS
- 3000 Evaluate alternative ASTAMIDS technologies as directed by Congress
- 680 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 27860

Project D606

Page 5 of 9 Pages

Exhibit R-2 (PE 0603619A)

477

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -
Advanced Development

D606

FY 1998 Planned Program:

- 5611 Initiate Advance Development Design and fabricate prototypes for GSTAMIDS
- 1521 Conduct developmental and early user tests for GSTAMIDS
- 7283 Complete Advanced Development Design for HSTAMIDS
- 700 Prepare Milestone II IPR documentation and EMD solicitation package for ASTAMIDS
- Total 15115

FY 1999 Planned Program:

- 6503 Continue Advanced Development Design for GSTAMIDS
- 453 Design/integration of sensors and platform (GSTAMIDS).
- Total 6956

B. Project Change Summary

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY 1997 President's Budget	32893	16464	6183	4959
Appropriated Value	32839	27860		
Adjustments to Appropriated Value	+2929			
FY 1998 Pres Bud Request	35768	27860	15115	6956

Change Summary Explanation:

Funding: FY 96 was increased (+3999) to fund ASTAMIDS/HSTAMIDS initiative to expedite delivery of prototypes to Bosnia but was offset by (-1070) of undistributed Congressional reductions and rescissions.

In FY97 transfer of \$12M by direction of Congress from 0604808 D415 to continue ASTAMIDS DEM/VAL and evaluate alternative technologies.

In FY 98 funds were increased (\$8.9M) to accelerate the initiation of GSTAMIDS and complete HSTAMIDS DEM/VAL phase.

In FY 99 funds were increased by \$2.0M to accelerate GSTAMIDS.

Schedule: GSTAMIDS initiation advanced by six months. ASTAMIDS DEM/VAL phase extended to 4Q97

C. Other Program Funding Summary

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
RDTE, A Budget Activity 5									Compl	Cost
PE 0604808A, Project D415, Mine Neutralization/ Detection	1834	2172	22605	44133	41782	16275	13731	13807	Cont	Cont

OPA 3, A Appropriation

Project D606

Page 6 of 9 Pages

Exhibit R-2 (PE 0603619A)

478

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -

Advanced Development

PROJECT

D606

C. Other Program Funding Summary

E72800, APOBS

S11500, ASTAMIDS

R68200, HSTAMIDS

M80300, ESMB

D. Schedule Profile

Conduct APOBS Flight Tests

Conduct System Design and Preliminary

Design Reviews for ESMB

Initiate Adv Dev Design for HSTAMIDS

Complete ASTAMIDS

Development/Fabrication of Prototype

Initiate Development Tests and Early User

Tests of ASTAMIDS

Conduct Milestone II for ASTAMIDS

Complete Technical Test and Conduct

Milestone II Review for ESMB

Conduct HSTAMIDS Technical Testing

Conduct Milestone I for GSTAMIDS

Complete Technical Test/IOT&E for

HSTAMIDS

Conduct Milestone II for HSTAMIDS

***Milestone completed**

Project D606

Page 7 of 9 Pages

Exhibit R-2 (PE 0603619A)

479

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
4 - Demonstration and Validation		0603619A Landmine Warfare and Barrier - Advanced Development			February 1997	D606
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999	
Development Primary Hardware		27518	19318	11556	5497	
Test and Evaluation		1906	1350	1749	559	
Government Engineering		5646	5512	1290	600	
Government Program Management		698	1000	520	300	
SBIR/STTR			680			
Total		35768	27860	15115	6956	
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type					
Performing	or Funding					
Activity	Vehicle					
	Award or					
	Obligation					
	Date					
Product Development Organizations						
Raytheon	CPIF	Nov 93	29204	17461	7943	3900
Northrop/	CPIF	Nov 93	19429	14249	3770	1500
Grumman						
Coleman Research	CPIF	May 96	6545	0	1287	3160
GDE	CPIF	May 96	11663	0	2042	5338
Tracor	CPIF	Dec 95	14503	0	10995	3726
TBD	TBD	TBD				
Misc.	Various	Various			2079	1694
SBIR/STTR						680
Support and Management Organizations						
NV/ESD/CECOM					4419	3131
Misc.					1327	3381
Test and Evaluation Organizations						
TECOM					1906	1350
Government Furnished Property: None						
Project D606						
					Exhibit R-3 (PE 0603619A)	
Page 8 of 9 Pages						

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -
Advanced Development

PROJECT

D606

	<u>FY 1996</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to</u>	<u>Total</u>
	<u>Prior to</u>					<u>Complete</u>	<u>Program</u>
Subtotal Product Development	31710	28116	19998	11556	5497		96877
Subtotal Support and Management		5746	6512	1810	900		14968
Subtotal Test and Evaluation		1906	1350	1749	559		5564
Total Project	31710	35768	27860	15115	6956		117409

Project D606

Page 9 of 9 Pages

Exhibit R-3 (PE 0603619A)

481

Item 45

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603627A Smoke, Obscurant and Target Defeating System - Advanced Development									
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		2623	6246	0	0	0	0	0	5155	Continuing	Continuing
DE78 Target Defeating Systems		0	0	0	0	0	0	0	5155	Continuing	Continuing
DE79 Smoke, Obscurant - Advanced Development		2623	6246	0	0	0	0	0	0	0	8869

Mission Description and Budget Item Justification: U.S. Forces must be able to effectively neutralize and degrade directed energy weapon systems and threat electro-optical systems/smart weapons that operate in the full range of the electro-magnetic spectrum. These program elements support the demonstration/validation (DEMVVAL) of logistically supportable, high performance smoke and obscurant agents, munitions and devices to improve the survivability of the combined arms force and complement combined weapons systems. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and projected smoke systems. The smoke obscurant technologies supported by this program enhance smoke systems as combat multipliers. This program element focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Smoke, Obscurant & Equip Systems Engineering and is correctly placed in Budget Activity 4.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603627A Smoke, Obscurant and Target Defeating

DE79

System - Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE79 Smoke, Obscurant - Advanced Development	2623	6246	0	0	0	0	0	0	0	8869

A. Mission Description and Justification: The Light Vehicle Obscuration Smoke System (LVOSS) is a self-defense smoke/obscurant device externally mounted on the vehicle. The LVOSS is expected to counter threat weapon systems operating in the visual and near infrared portions of the electro-magnetic spectrum. The LVOSS consists of the XM7 light weight discharger and installation kits for the infantry HMMWV equipped TOW and Military Police HMMWV variants.

Acquisition Strategy: Project DE79 Smoke, Obscurant-Advanced Development: The LVOSS is an in-house effort and will be type classified from the demonstration/validation phase. A make or buy study is being conducted/coordinated with IOC during 2QFY97 for production of the LVOSS grenade.

FY 1996 Accomplishments:

- 60 LVOSS-Conducted Milestone I/II In-Process Review.
- 740 LVOSS-Completed Prototype Design Package.
- 950 LVOSS-Fabricated Pre-Production Test (PPT) Hardware.
- 873 LVOSS-Conducted PPT.

Total 2623

FY 1997 Planned Program:

- 1800 LVOSS-Fabricate Production Qualification Test (PQT) Hardware.
- 2558 LVOSS-Conduct PPQT and Systems Operational Modeling.
- 1767 LVOSS-Systems Engineering, Planning and Documentation.
- 121 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 6246

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project DE79

Page 2 of 4 Pages

Exhibit R-2 (PE 0603627A)

483

Item 46

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603627A Smoke, Obscurant and Target Defeating

DE79

System - Advanced Development

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
3160	6380	5631	4798
3248	6246		
-625			
2623	6246		

Change Summary Explanation:

Funding: Due to accelerated RDTE, funds moved to procure LVOSS (FY98 -5631/FY99 -4798).
Funds reprogrammed to higher priority requirements (FY 96 -537).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd	Total Cost Cont'd
RDTE,A Budget Activity 5 PE 0604609A Project	1915	0	0	703	937	2552	4814	8362		
D200 Smoke/Obscurant										
OPA-3 Appropriation			2164	4752	2317				0	9233
G70700 - LVOSS										8524
M99104 - M157 Smoke Generator	5052	3472								

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999	FY 1999
LVOSS-Conduct Milestone I/II IPR	1	2	3	4	1	4	1	4	2	3
LVOSS-Fabricate PPT Hardware	X*									
LVOSS-Conduct PPT										
LVOSS-Fabricate PQT Hardware										
LVOSS-Conduct PQT										
LVOSS-Systems Engineering Planning and Documentation Complete										
LVOSS-IOTE										

*Milestone completed

Project DE79

Page 3 of 4 Pages

Exhibit R-2 (PE 0603627A)

484

Item 46

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603627A Smoke, Obscurant and Target Defeating

DE79

System - Advanced Development

	FY 1996	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown				
Primary Hardware Development	285	385		
Development Spt Equipment Acquisition	85	85		
Systems Engineering	351	505		
Integrated Logistics Support	95	115		
Quality Assurance	85	85		
Reliability, Maintainability and Availability	75	75		
Configuration Management	85	175		
Technical Data	187	300		
Production Qualification Test	626	2258		
Initial Operational Test and Evaluation		1200		
Contractor Engineering Support	95	150		
Government Engineering Support	400	367		
Program Management	254	425		
SBIR/STTR		121		
Total	2623	6246		

B. Budget Acquisition History and Planning Information: Not applicable.

Project DE79

Page 4 of 4 Pages

Exhibit R-3 (PE 0603627A)

485

Item 46

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		DATE										February 1997
4 - Demonstration and Validation		PE NUMBER AND TITLE										PROJECT
		0603640A Artillery Propellant Development										DB91
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DB91 Artillery Propellant Development		20811	8322	8521	0	0	0	0	0	0	116329	

A. Mission Description and Budget Item Justification: This program element is a dual-faceted program focused on efforts associated with development of the Modular Artillery Charge System (MACS) and the 155mm Advanced Solid Propellant Armament (ASP-A). The MACS is a solid propellant charge system consisting of two different types of charge increments, designated the XM231 and XM232. Each of these increments contains propellant, center core ignition elements, wear additives, flash and blast reducers and decoupling agent in a combustible case. MACS achieves zoning through the use of multiple increments of XM231 and XM232. MACS continues the older unicharge development which used a single charge increment, the XM230, to achieve zoning. The ASP-A consists of the XM297 Cannon, its Laser Ignition System (LIS), the XM200 Gun Mount and the XM194 Gun Mount. The XM297, LIS and the XM200 are being developed for the Crusader self-propelled howitzer (SPH). The XM194 is being developed to allow "bolt-in/bolt-out" integration of the XM297 into the M109A6 Paladin SPH. Since the ASP-A was selected as the primary armament system for Crusader, beginning in FY97, ASP-A is funded in PE 0603854, Project D505. This program element focuses on the technology demonstration and validation of the MACS and the 155mm ASP-A and is correctly placed in Budget Activity 4.

Acquisition Strategy: Not applicable**FY 1996 Accomplishments:**

- 18358 MACS: Continued development and supported the XM297 program; ASP-A: Continued development of the XM297 cannon and its laser ignition system; initiated development of the XM200 gun mount.
- 600 Provided project management support and management engineering services.
- 1853 ASP-A: Continued XM297 Engineering Development Testing (EDT), including completion of EDT phases 7 and 8 and second pre-fatigue test; started the third pre-fatigue test; hydraulic fatigue testing of two each XM297 tubes and breeches.
- Total 20811

FY 1997 Planned Program:

- 6186 Continue development of MACS for 39 and 59 caliber type classification.
- 600 Provide project management support and management engineering services.
- 1333 Initiate preliminary testing for 39 caliber type classification.
- 203 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs
- Total 8322

Project DB91

Page 1 of 4 Pages

Exhibit R-2 (PE 0603640A)

486

Item 47

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603640A Artillery Propellant Development

PROJECT

DB91

FY 1998 Planned Program:

- 7821 Continue development of MACS for 52 caliber type classification.
- 300 Project management support and management engineering services.
- 400 Conduct Milestone III testing for type classification of MACS at 39 caliber.

Total 8521

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	21347	18450	9188	0
Appropriated Value	21946	8322		
Adjustments to Appropriated Value	-1135			
FY 1998 President's Budget Request	20811	8322	8521	0

Change Summary Explanation: Funding: FY 97 Congressional decrement of 10128

C. Other Program Funding Summary

Procurement, Ammo, Army, ER 8021

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
1	2	3	4	1	2	3	4	1	2	3
Acquisition Milestones										
Milestone II IPR (MACS)			X*							
Milestone III IPR (MACS - XM231)							X			
Engineering Milestones										
Combustible Case Design Freeze (MACS)										
Initiate Production Readiness Review										
XM231/XM232										
Production Readiness Review XM231										
XM297 Cannon Milestones - 2nd Pre-Fatigue Test										

* Milestone completed

Project DB91

Page 2 of 4 Pages

Exhibit R-2 (PE 0603640A)

487

Item 47

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
4 - Demonstration and Validation											
PE NUMBER AND TITLE											
0603640A Artillery Propellant Development											DB91
A. Project Cost Breakdown											
Product Development											
Support and Management											
Test and Evaluation											
SBIR/STTR											
Total											
B. Budget Acquisition History and Planning Information											
Performing Organizations											
Contractor or											
Government											
Performing											
Activity											
Product Development Organizations											
ARMTEC Defense											
Products,											
Coachella, CA											
Olin Corp, St.											
Petersburg, FL											
Olin Corp,											
Marion, IL (Load											
Assembly & Pk)											
DSTI, Greenbelt,											
MD											
Hi Shear,											
Torrence, CA											
Other contracts											
(\$100K or less)											
ARDEC, Picatinny											
Arsenal, NJ,											
Rock Island, IL,											
Watervliet											
Arsenal, NY											
Project DB91											

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603640A Artillery Propellant Development

DB91

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Radford Army Ammunition Plant, VA, Hercules Inc. Army Research Laboratory, Adelphi, MD Wright-Patterson AFB, Dayton, OH Various activities (\$100K or less) SBIR/STTR	FFP				2474	1573				0	4047
	PO				2704	1331	470	450		0	4955
	PO				100	51	270			0	421
					616	473		100		0	1189
							203				203
					2958	600	600	300		0	4458
					2944	1453	933			0	5330
					597	400	400	400		0	1797
					72176	18358	6389	7821			104744
					2958	600	600	300			4458
					3541	1853	1333	400			7127
					78675	20811	8322	8521			116329

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project DB91

Page 4 of 4 Pages

Exhibit R-3 (PE 0603640A)

489

Item 47

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	181647	7803	2007	2008	20496	61894	94697	114741	Continuing	Continuing
DB88 Crusader Resupply Vehicle - Advanced Development	45923	0	0	0	0	0	0	0	0	127370
DQ19 Future Combat System	0	7803	0	0	2004	24843	28877	38457	Continuing	Continuing
D018 Future Scout Vehicle (FSV) - Advanced Development	0	0	2007	2008	18492	37051	65820	76284	Continuing	Continuing
D409 Crusader Self-Propelled Howitzer - Advanced Development	135724	0	0	0	0	0	0	0	0	546347

Mission Description and Budget Item Justification: On 15 Nov 94, the Crusader Projects (DB88 and D409) were approved by the Defense Acquisition Board to proceed into the Demonstration and Validation phase. The Crusader system is the Army's next generation self-propelled howitzer and artillery resupply vehicle for Force XXI. This system will provide an overmatching fire power capability that will support the force commander's goal of dominating the maneuver battle and will incorporate advanced technologies to increase accuracy, rate of fire, survivability, mobility and ammunition handling speed, and decreased crew size. When fielded, Crusader will displace the M109A6 Paladin self-propelled Howitzer and M992 Field Artillery Ammunition Supply Vehicle in rapidly deployable and forward deployed forces. Continuation of Crusader Demonstration and Validation is in PE 0603854A, Project D505. These Crusader projects were combined in FY 97 based on the 14 Nov 94 DAB review. Project DQ19 invests in high pay-off advanced technologies applicable to Abrams series tanks. The Army plans to develop and incorporate a series of fire control, survivability and automotive enhancements to the M1A1 and M1A2 fleet. Several candidates' technologies are being currently evaluated for the optimum solution to anticipated threat systems. Project D018 funds the development and demonstration phase of the Future Scout Vehicle (FSV). The FSV will replace the current ground scout systems in the battalion/brigade and division/regiment levels. This project will fund finalization of requirements definition, design definition, sensor maturation, and software integration efforts. All projects in this program element fund the advanced development phase of Army combat systems and are therefore correctly placed in Budget Activity 4.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

PROJECT

DB88

0603645A Armored Systems Modernization -
Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB88 Crusader Resupply Vehicle - Advanced Development	45923	0	0	0	0	0	0	0	0	127370

A. Mission Description and Justification: The Crusader Resupply Vehicle (RSV) will increase ammunition payload and will provide automated, rapid transfer of ammunition, propellant and fuel to the Crusader self-propelled howitzer (SPH). The RSV will support the decentralized and continuous operations of the SPH, thereby increasing SPH mission effectiveness. Automation and robotics in the RSV will allow crew reduction resulting in life cycle cost benefits over the current system. The RSV will have increased ballistic and non-ballistic survivability features. Mobility improvements will allow the Crusader system to keep up with the maneuver force. Beginning in FY 97 this project merges into a single project along with D409 to form D505 Crusader - AD, PE 0603854A, Artillery Systems Advanced Development.

Acquisition Strategy: None Applicable

FY 1996 Accomplishments:

- 36249 Performed Development Phase I/II Contract Efforts; Downselected to Solid Propellant (SP) due to affordability and risk concerns; Conducted System Functional Review (SFR) and commenced preliminary design
- 7949 Continued Product Development Team support, management of the propellant technology and other management support
- 1725 Continued Management Support
- Total 45923

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
59386	0	0	0
61054			
-15131			
45923	0	0	0

Project DB88

Page 2 of 16 Pages

Exhibit R-2 (PE 0603645A)

491

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		February 1997	
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development						PROJECT DB88	
Change Summary Explanation: Funding: The FY 96 reduction is a result of an approved reprogramming (-12668) and undistributed Congressional reductions and rescissions (-2463).									
C. Other Program Funding Summary									
RDTE, A Budget Activity 5									
PE 0604854A, Project D503 Crusader - ED									
PE 0604854A, Project D2KT Crusader									
Operational Test									
RDTE, A Budget Activity 4									
PE 0603854A, Project D505 Crusader - AD									
D. Schedule Profile									
Conduct SFR and begin preliminary design									
* Milestone completed									

Project DB88

Page 3 of 16 Pages

Exhibit R-2 (PE 0603645A)

492

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

DB88

A. Project Cost Breakdown

FY 1996 FY 1997 FY 1998 FY 1999

Development Requirements Analysis/Component Maturation

36249

Phase I & II Contract

Contractor Engineering Support

1255

Government Engineering Support

6694

Program Management Support

1725

Total

45923

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government Method/Type

Performing or Funding

Award or Obligation

Date

Performing Activity

EAC

Project Office

EAC

Total

Prior to FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Product Development Organizations

United Defense LP

SS/CPFF

Sep 94

TBD

5565

5565

36249

0

0

0

58947

5565

2000

17287

0

4576

20960

7975

Support and Management Organizations

Dept of Energy - MIPR

Oak Ridge Nat'l

Labs, TN

PM-Crusader,

Picatinny

Arsenal, NJ

ARDEC, Picatinny

PO

17638

3322

0

20960

7975

Other Field Activities

PO

5603

2372

0

7975

Project DB88

Page 4 of 16 Pages

Exhibit R-3 (PE 0603645A)

493

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT				
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT				
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development										DB88				
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total		FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program				
					Prior to FY 1996											
Various other contracts TECOM, Yuma Proving Grd, AZ				EAC	EAC	8805	1255				0	10060				
Government Furnished Property: None																
Subtotal Product Development						29263	37249					66512				
Subtotal Support and Management						52184	8674					60858				
Subtotal Test and Evaluation						81447	45923					127370				
Total Project																

Project DB88

Page 5 of 16 Pages

Exhibit R-3 (PE 0603645A)

Project DB88

Page 5 of 16 Pages

Exhibit R-3 (PE 0603645A)

494

Item 48

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603645A Armored Systems Modernization -

PROJECT

DQ19

Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DQ19 Future Combat System	0	7803	0	0	2004	24843	28877	38457	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Army plans to maintain the capabilities of the Abrams tank with limited improvements until the 2015 to 2020 timeframe when a replacement to the Abrams will be needed. High payoff improvements will be investigated and produced where funding is available. The replacement to the Abrams, called the Future Combat System (FCS), will incorporate, to the extent possible, leap ahead capabilities in lethality, fire control, mobility, survivability, target acquisition, and sustainability.

Acquisition Strategy: The Army will maximize investments in the science and technology base for the selection of high payoff improvements to the Abrams tank. General Dynamics Land Systems Division (GDLS) will remain the prime contractor for integration development and production. The acquisition strategy for the FCS has not been formed, but it will maximize competition in development and production. For FCS, emphasis is being placed on the choice of a main armament system, which will be the principal driver of virtually all other aspects of the design.

FY 1996 Accomplishments: Program not funded in FY 96

FY 1997 Planned Program:

- 3100 Investigate improvements to M1A2 tank lethality (\$1.0M) and FCS concept studies (\$2.1)
- 2700 Analyze automotive improvements
- 1300 Propose M1A1 Command and Control improvements incorporating digital technology
- 512 Provide Government Support
- 191 Small Business Innovation Research / Small Business Technology Transfer (SBIR / STTR) Programs
- Total 7803

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

Project DQ19

Page 6 of 16 Pages

Exhibit R-2 (PE 0603645A)

495

Item 48

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0603645A Armored Systems Modernization -

DQ19

FY 1999

7803

0

FY 2003

0

3973

FY 1998

X

Page 7 of 16 Pages

Exhibit R-2 (PE 0603645A)

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

PROJECT

DQ19

FY 1996

FY 1997

FY 1998

FY 1999

A. Project Cost Breakdown

M1A2 Tank Lethality & FCS Concept Analyses

Automotive Analysis

M1A1 Command and Control Improvements

Government Support

SBIR/STTR

Total

3100

2700

1300

512

191

7803

B. Budget Acquisition History and Planning Information

Performing Organizations

Contract

Government

Performing

Activity

Vehicle

Date

Award or

Obligation

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Product Development Organizations

GDLS

Sterling Hgts, MI

TBD

TBD

SBIR/STTR

Support and Management Organizations

PMO / TARDEC

MIPR

Warren, MI

Test and Evaluation Organizations

TBD

Government Furnished Property

Not Applicable

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

7291

512

7803

3900

3200

191

512

Con't

Con't

Con't

Con't

Con't

Page 8 of 16 Pages

Exhibit R-3 (PE 0603645A)

497

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development								D018	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D018	Future Scout Vehicle (FSV) - Advanced Development	0	0	2007	2008	18492	37051	65820	76284	Continuing	Continuing
<p>A. Mission Description and Justification: The Future Scout Vehicle (FSV), also known as the Future Scout and Cavalry System (FSCS), is the Army's next generation ground reconnaissance and intelligence gathering, combat vehicle system. FSV will provide Army reconnaissance elements a platform with significant improvements in vehicle mobility, survivability, lethality, target acquisition and communication capabilities through integration of advanced technologies. Advanced sensors and communication systems, combined with sophisticated vehicle signature management, will significantly enhance the scout's capability to rapidly detect, identify, recognize, and hand-off multiple targets to field commanders under all conditions and in all environments.</p> <p>Acquisition Strategy: Current plans call for the competitive selection of a system integrator who will be given responsibility for joint development of an FSV design concept. Extensive modeling and simulation will be utilized to meet and finalize system requirements, verify and validate the requirements, and establish a design definition baseline. The baseline will support follow-on Engineering and Manufacturing Development (EMD). The US Government is also attempting to establish an international cooperative effort with the United Kingdom to share development costs in, at a minimum, the Program Definition and Risk Reduction of a FSV program.</p> <p>FY 1996 Accomplishments: Project not funded in FY 96</p> <p>FY 1997 Planned Program: Project not funded in FY 97</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 2007 Initiate Project Management (PM); Integrated Product Team Studies Total 2007 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2008 Continue Project Management; Integrated Product Team Studies Total 2008 											

Project D018

Page 9 of 16 Pages

Exhibit R-2 (PE 0603645A)

498

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation**0603645A Armored Systems Modernization -
Advanced Development****D018****B. Project Change Summary**

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 President's Budget Request

FY 1996

0

FY 1997

0

FY 1998

0

FY 1999

0

Change Summary Explanation: Increases in FY 98 (+2007) and FY 99 (+2008) due to program initiation.

C. Other Program Funding Summary

PE 604645A, D022 - Future Scout Vehicle

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

To
ComplTotal
Cost
Cont**D. Schedule Profile** None

33338

Project D018

Page 10 of 16 Pages

Exhibit R-2 (PE 0603645A)

499

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		D018		
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development				
A. <u>Project Cost Breakdown</u>						
Project Management						
Total						
B. <u>Budget Acquisition History and Planning Information</u>						
Performing Organizations						
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to	Budget to
Performing Activity	Vehicle	Date	EAC	EAC	FY 1996	Complete
Product Development Organizations: None						
Support and Management Organizations						
PM Office and IPT MIPR						
Test and Evaluation Organizations: None						
Government Furnished Property		None				
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

PROJECT

D409

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D409 Crusader Self-Propelled Howitzer - Advanced Development	135724	0	0	0	0	0	0	0	0	546347

A. Mission Description and Justification: The Crusader self-propelled howitzer (SPH) is the Army's next generation 155mm SPH system providing high payoff technology capabilities in support of the maneuver force. This project develops AFAS Advanced Technology Demonstrator (ATD); matures the alternative gun technology; matures packaging and formulation of the advanced propellant; matures the fire control/artillery component; and, provides funding for the Development Phases I/II efforts. SPH requirements include leap-ahead capabilities in range, rate-of-fire, sustained fire, time-on-target, accuracy, responsiveness, automated ammunition handling/resupply, reduced crew size and survivability. Beginning in FY 97 this project merges into a single project along with DB88 to form D505 Crusader - AD, PE 0603854A, Artillery Systems Advanced Development.

FY 1996 Accomplishments:

- 126548 Product Development - Continued developmental efforts under the Development Phases I/II contract; Downselected to solid propellant due to affordability and risk concerns; Conducted System Functional Review and commenced preliminary design
- 8302 Support and Management - Continued project management efforts, to include scientific and engineering management services
- 874 Test and Evaluation - Began contractor Development Test and Evaluation under the Development Phases I/II contract

Total 135724

FY 1997 Planned Program: Program not funded in FY 97

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
126866	0	0	0
130459			
+5265			
135724	0	0	0

Project D409

Page 12 of 16 Pages

Exhibit R-2 (PE 0603645A)

501

Item 48

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603645A Armored Systems Modernization - Advanced Development

PROJECT

D409

C. Other Program Funding Summary

RDTE, A Budget Activity 5
PE 0604854A, Project D503 Crusader - ED
RDTE, A Budget Activity 5
PE 0604854A, Project D2KT Crusader
Operational Test
RDTE, A Budget Activity 4
PE 0603854A, Project D505 Crusader - AD
RDTE, A Budget Activity 5
PE 0604645A, Project D175 MOFA

D. Schedule Profile

Conduct SFR and begin preliminary design

* Milestone completed

[illegible]

	FY 1996	X*
1	2	3

	FY 1997	FY 1998	FY 1999
	2	1	2
	3	3	3
	4	4	4

1999 3 4

Project D409

Page 13 of 16 Pages

Exhibit R-2 (PE 0603645A)

Item 48

502

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation
0603645A Armored Systems Modernization -
Advanced Development

D409

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	126548			
Support and Management	8302			
Test and Evaluation	874			
Total	135724			

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete FY 1999	Total Program	
<u>Product Development Organizations</u>												
United Defense, Minneapolis, MN	Comp/CPIF	May 91	76173	76173	76173					0	76173	
Martin Marietta, Pittsfield, MA	SS/CPIF/CPF	Jan 92	TBD	100799	100799					0	100799	
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD	TBD	83997	116504				0	200501	
ARDEC, Picatinny Arsenal, NJ	PO			63042	63042	5087				0	68129	
Watervliet Arsenal, NY												
Rock Island Arsenal, IL												
ARL, Aberdeen Proving Grd, MD/ Watertown, MA	PO			11799	11799	1294				0	13093	
Olin, Charleston, TN	SS/FFP	Sep 93	1988	1988	1988					0	1988	

Project D409

Page 14 of 16 Pages

Exhibit R-3 (PE 0603645A)

503

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997		PROJECT				
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT			
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development						D409			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Grumman, Bethpage, NY	Comp/CPFF	Jan 93	4204	EAC 4275	4204	4275				0	4204
Martin Marietta, Pittsfield, MA	Comp/CPFF	Feb 93	1806		1806					0	1806
LB&M, Lawton, OK					23521	3663				0	27184
Various OGA's and Contractors											
Support and Management Organizations											
PM Crusader, Picatinny Arsenal, NJ					9372	2889				0	12261
ARDEC, Picatinny Arsenal, NJ	PO				13172	4909				0	18081
TRW, Redondo Beach, CA					3503					0	3503
Various OGA's and Contractors					1612	504				0	2116
Test and Evaluation Organizations											
TECOM, Yuma	PO				4885	874				0	5759
Proving Grd, AZ; CSTA, Aberdeen											
Proving Grd, MD											
Morton Thiokol, Elkton, MD	SS/FPI	May 93	3307	3307	3307					0	3307
Olin, Charleston, TN	SS/FPI	May 93	3168	3168	3168					0	3168
TBD-Ammo Purchase		TBD	TBD	TBD	N/A						
Project D409											
Page 15 of 16 Pages										Exhibit R-3 (PE 0603645A)	

504

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603645A Armored Systems Modernization -

D409

Advanced Development

Government Furnished Property: None

	Total FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	371604	126548					498152
Subtotal Support and Management	27659	8302					35961
Subtotal Test and Evaluation	11360	874					12234
Total Project	410623	135724					546347

Project D409

Page 16 of 16 Pages

Exhibit R-3 (PE 0603645A)

505

Item 48

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603649A Engineering Modification Equipment - Advanced Development								DG24	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG24	M1 Breacher	13591	0	0	0	0	0	0	0	0	72458
<p>A. Mission Description and Budget Item Justification: The Grizzly (M1 Breacher) will be developed around the M1 Abrams tank chassis and will integrate a versatile/survivable full-width mine clearing blade with reactive depth control, a power driven excavating arm, and a commander's armored control station. The Grizzly will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and will be as survivable as, the force it is supporting. This program element/project is correctly placed in Budget Activity 4, focusing on efforts associated with advanced technology development to include demonstration and validation in the areas of mine clearing blade reactive depth control, power bus, vetronics, survivability, and hydraulics.</p> <p>Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications have been written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly will meet the mission profile required by the Operational Requirements Document. Through the production buy the vehicle will be sole sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 1100 Completed Government Development Testing and Conducted Early User Testing • 10118 Refined Design, Validated Logistics Functions, and Applied Engineering Changes • 2073 Provided Government/Contractor Program Management and System Engineering • 300 Completed Dem/Val Total 13591 <p>FY 1997 Planned Program: The project transitions to PE 0604649A, DG25, for the Engineering and Manufacturing Development (EMD).</p> <p>FY 1998 Planned Program: Project not funded in FY 98</p> <p>FY 1999 Planned Program: Project not funded in FY 99</p>											

Project DG24

Page 1 of 4 Pages

Exhibit R-2 (PE 0603649A)

506

Item 49

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603649A Engineering Modification Equipment -
Advanced Development

DG24

B. Project Change Summary

FY 1997 President's Budget Request
Appropriated Value
Adjustments to Appropriated Value
FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
9839	0	0	0
10115			
+3476			
13591	0	0	0

Change Summary Explanation:

Funding: FY 1996 (+3476) funding increase was required to extend the Demonstration and Validation phase.
Schedule: Milestone II was accomplished in December 1996 and approval was received to enter the EMD phase.
Technical: Testing validated system performance allowing the Grizzly program to enter EMD.

C. Other Program Funding Summary

RDTE, A Budget Activity 5
PE 0604649A, Project DG25, M1 Breacher Dev
PA, WTCV, GZ3200, Breacher MOD
PA, WTCV, GEO175, Breacher Spares
PA, WTCV, G84000, Breacher Trng Dev

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	6501	34102	43748	51420	58745	39210	19294			253020
				10444	10964	83399	86313	125900	Cont'd	Cont'd
							2334	2666	Cont'd	Cont'd
						397	15726	1527		17650

D. Schedule Profile

1
Conduct Development and Early User
Testing

FY 1996	
2	3
X*	

FY 1997	
2	3

FY 1998	
1	4

FY 1999	
2	3

FY 2000	
1	4

FY 2001	
2	3

FY 1999	
2	3

Conduct Milestone II Review
Award EMD Contract

X*

X*

* Milestone Completed

Project DG24

Page 2 of 4 Pages

Exhibit R-2 (PE 0603649A)

507

Item 49

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
4 - Demonstration and Validation		0603649A Engineering Modification Equipment - Advanced Development				
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999	
Development Engineering		6650				
Logistics Support		2050				
System Test & Evaluation		2518				
System Management		2373				
Total		13591				
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract Method/Type	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	Budget to Complete FY 1999
Performing Activity	Vehicle			EAC	FY 1996	FY 1997
Product Development Organizations						
United Defense, York, PA	SS-CPIF	Sep 92 (K Mod)	60554	60554	10606	60554
Other Contracts	Various	Various	645	645	166	811
Support and Management Organizations						
TACOM			4901	4901	1488	6389
Warren, MI			250	250		250
ANAD			1225	1225	231	1456
Anniston, AL			230	230		230
Other Gov't Agencies			856	856	780	1636
Contract Support to Milestone Rev						
Test and Evaluation Organizations						
TECOM						
APG, MD						

Project DG24

Page 3 of 4 Pages

Exhibit R-3 (PE 0603649A)

508

Item 49

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603649A Engineering Modification Equipment -
Advanced Development

DG24

Government Furnished Property

Contract

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
TACOM Warren, MI	Requisitions	Various	Various	159						159
Support and Management Property										
Test and Evaluation Property	Requisitions	Various	Various	653	320					973
TACOM Warren, MI										
Subtotal Product Development				50752	10772					61524
Subtotal Support and Management				6606	1719					8325
Subtotal Test and Evaluation				1509	1100					2609
Total Project				58867	13591					72458

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Project DG24

Page 4 of 4 Pages

Exhibit R-3 (PE 0603649A)

509

Item 49

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603653A Advanced Tank Armament System								DB99	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB99	Advanced Tank Armament System	9335	11395	8982	8928	15070	26420	31726	25150		141779

A. Mission Description and Budget Item Justification: Our success in Desert Storm was due in large part to the superiority of our armament systems over those of the Iraqi Army. We were able to see, hit and kill the enemy long before they were even aware of our presence. The goal of the Advanced Tank Armament System (ATAS) program is to maintain our superiority over increasingly more capable future enemy tanks. The ATAS program is one of the principal programs supporting tank lethality improvements. The program is developing and demonstrating a number of key gun and fire control technologies which offer significant payoffs in lethality for the current tank fleet, the next upgrade to the M1A2 Abrams tank, as well as other future weapon system platforms.

The ATAS Program has two main phases. Phase I develops and demonstrates, in FY 97, autotarget tracking technology that is applicable to the current M1 Abrams series of tanks. Phase I is a requirements oriented, Combat Developer (User) directed program that increases tank lethality by allowing the tank crew to quickly kill enemy battlefield targets. Phase I technology, when applied to tank training devices, will also reduce tank crew training costs by reducing the amount of training necessary for new Gunners to perform proficiently. Phase II develops and matures a highly lethal tank main gun, the XM291, that can kill advanced enemy tanks at long range. Phase II also develops advanced fire control system components consisting of a Continuous Muzzle Reference System, an Equilibrated Gun Turret Drive System, improved ballistics and target state estimating system. In FY 97, the program will study the inclusion of a compact autoloader for an FY 99 test in the ATAS Phase II, M1A2 test vehicle. Maturation of the XM291 gun (including redesign for low cost M1A2 installation) and the gun stabilization system will continue through FY 98. This includes wear resistant barrel coatings applied to the XM291 gun tubes to reduce gun barrel erosion, and modifications to the XM291 gun and the stabilization system to reduce gun vibration and increase fire-on-the move accuracy. These gun components, and possibly an autoloader, will be tested and integrated into an M1A2 tank for a technology demonstration in FY 99. ATAS technology will be applied to Future Weapon Systems platforms such as the Future Scout and Cavalry Vehicle and Future Combat System in both large and medium caliber to reduce the overall cost of Army weapon systems' development. The XM291 gun, advanced gun stabilization system, and autoloader coupled with the advanced fire control system components allow the tank crew to engage enemy targets at increased ranges, faster and more accurately than currently fielded systems. XM291 gun Engineering Manufacturing Development (EMD) will begin in FY 00 to prepare the cannon for possible integration into the Abrams tank.

The ATAS program is conducting prototyping, testing and early operational assessment of critical tank armament systems, subsystems, and components; identifying cost drivers and alternatives using modeling and simulation, and working with the User representative to establish performance objectives and identify cost-schedule-performance trade-offs. ATAS is also demonstrating component performance enhancements for application to future Abrams upgrades, and is appropriately placed in Budget Activity 4.

Acquisition Strategy: The technologies in ATAS will be demonstrated then transferred to PM Abrams for further technical development. Technologies in ATAS may flow into the next major upgrade or Engineering Change Proposal (ECP) to the current Abrams tank. Several contractors and government agencies are used to develop or integrate existing technologies.

Project DB99

Page 1 of 5 Pages

Exhibit R-2 (PE 0603653A)

510

Item 50

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603653A Advanced Tank Armament System

DB99

FY 1996 Accomplishments:

• 1600 Gun Technology - continued gun maturation program
 • 900 Phase I - designed/fabricated/integrated autotarget tracker hardware/software for M1A2 tank
 • 6835 Phase II - procured objective fire control hardware, began software integration, initiated turret integration study
 Total 9335

FY 1997 Planned Program:

• 1600 Gun Technology - continue gun maturation program including redesign of the gun mount for low cost M1A2 installation
 • 600 Phase I - complete autotarget tracker demonstration
 • 6967 Phase II - complete fire control component hardware/software integration, continue turret integration study
 • 2000 Ruggedize the Compact Autoloader design
 • 228 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
 Total 11395

FY 1998 Planned Program:

• 300 Phase II - complete fire control component testing
 • 1930 Phase II - design/apply coatings to XM291 gun tubes
 • 2662 Phase II - design/ fabricate modified XM291 gun
 • 1130 Phase II - continue turret integration
 • 2960 Phase II - design/fabricate stabilization system
 Total 8982

FY 1999 Planned Program:

• 1370 Phase II - test coatings
 • 2120 Phase II - test XM291 gun, stabilization system and autoloader as components
 • 4838 Phase II - integrate XM291 gun, stabilization system and into M1A2 test tank
 • 600 Phase II - test complete XM291 gun, stabilization system
 Total 8928

B. Project Change Summary

FY 1997 President's Budget
 Appropriated Value
 Adjustments to Appropriated Value
 FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
9683	9639	9686	9693
9955	11395		
-620			
9335	11395	8982	8928

Project DB99

Page 2 of 5 Pages

Exhibit R-2 (PE 0603653A)

511

Item 50

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603653A Advanced Tank Armament System

PROJECT

DB99

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development/Contractor	7135	7981	5490	5739
Primary Hardware Development/Government	700	2186	2432	1829
Quality Assurance/ARDEC	300	500	350	350
Developmental Test & Evaluation	600	100	300	600
Program Management (PM-TMAS)	600	400	410	410
SBIR/STTR		228		
Total	9335	11395	8982	8928

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	--------------------------------	--------------------------	---------------------	--------------------	------------------------	---------	---------	---------	---------	--------------------	---------------

Product Development Organizations

Texas Instruments	C-CPFF	Sep 90		20575	2733	6935	4181	1900	1939	63166	17688
Benet Laboratories	OGA				1600	800	1886	2432	1829		71713
Hughes Aircraft	SS-CPFF	Jan 93		240	40	100	100				240
GDLS							2000	3590	3800		9390
Western Design							1700				1700
Howden											
ARDEC	OGA				200		300				500
SBIR/STTR							228				228
Support and Management											
PM-TMAS/ARDEC					100	900	900	760	760	9700	13120
Test and Evaluation											
CSTA					100	600	100	300	600	25500	27200

Government Furnished Property: Not Applicable

Project DB99

Page 4 of 5 Pages

Exhibit R-3 (PE 0603653A)

513

Item 50

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0603653A Advanced Tank Armament System

DB99

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
	4773	9335	11395	8982	8928	98366	141779
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	4773	9335	11395	8982	8928	98366	141779

Page 5 of 5 Pages

Exhibit R-3 (PE 0603653A)

Item 50

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6360	23170	21214	10049	5074	3699	3734	3755	0	77168
D370 JTIDS/EPLRS	5699	19632	21214	10049	5074	3699	3734	3755	0	72969
D2QT EPLRS/JTIDS Operational Test	661	3538	0	0	0	0	0	0	0	4199

Mission Description and Budget Item Justification: The Army Data Distribution System (ADDS), which consists of the Enhanced Position Location Reporting System (EPLRS), the Joint Tactical Information Distribution System (JTIDS), and the Near Term Digital Radio (NTDR) provides support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated system. Project D370 is capable of "digitizing data messages" that must be transmitted on the battlefield. It is capable of providing multi-functions; data communications, unit locations and unit identification. The ADDS network automatically utilizes manpack, surface vehicle and airborne vehicle user units to achieve range extension. It has been designated specifically to meet the data communications requirements of emerging tactical automated data processing and sensor based systems. The ADDS will provide reliable, real-time, secure, jam-resistant data communications and position location capabilities to the soldier and his unit commander. These projects focus on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Army Data Distribution and are correctly placed in Budget Activity 4.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D370

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D370 JTIDS/EPLRS	5699	19632	21214	10049	5074	3699	3734	3755	0	72969

A. Mission Description and Budget Item Justification: The Near-Term Digital Radio (NTDR) is a Non-Developmental Item (NDI) Research and Development program to procure systems for test and experimentation that will lead to production/fielding for Force Package 1 units. The program's vision is to create the Army Communication data backbone for Platoon to Brigade for Force XXI. It is one of the seven major elements which will provide a seamless digital communication capability throughout the fighting force for the Digital battlefield of the 21st century. To allow the NTDR to evolve and to make maximum use of technology insertions, it is based on an open architecture which allows programmability and future expansion. The project will provide reliable, real-time, secure, jam-resistant data communications and position location capabilities to the soldier and his unit commander. This project provides data distribution support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated systems, and is capable of "digitizing data messages" that must be transmitted on the battlefield.

Acquisition Strategy: The NTDR program is following a Non-Development Item (NDI) approach with an RDTE contract awarded competitively in January 1996. The Near Terminal Digital Radio acquisition strategy is to fabricate NTDR radios for an IOT&E in 2QFY99. In FY 97, the NTDR units will be utilized for testing and experiments both at EPG and in Division XXI which will focus on enhancing the command and control aspects of maneuver warfare. The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program currently viewed as an eventual low cost replacement for parts of the JTIDS family of high speed data terminals. Remaining effort in FY97 for the EPLRS program is for required NCS-E(D) documentation.

FY 1996 Accomplishments:

- 867 JTIDS Software Development Completion
- 1792 Net Control Station (Downsize) Software Development Completion
- 2337 NTDR Program Hardware and Software development
- 703 Program Management/Test Activities
- Total 5699

FY 1997 Planned Program:

- 15108 Continue NTDR Program
- 1588 Program Management Activities for NTDR
- 476 MIDS Contract Development/Engineering Support
- 1392 NTDR Testing
- 617 Documentation for EPLRS Net Control Station Downsize (NCS-E(D))
- 451 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 19632

Project D370

Page 2 of 9 Pages

Exhibit R-2 (PE 0603713A)

516

Item 51

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D370

FY 1998 Planned Program:

• 2595 Continue MIDS Development/Engineering Support
 • 2031 Program Management Activities for NTDR
 • 4618 Test Activities (NTDR)
 • 11783 Continue/Complete NTDR Program Hardware/Software Development
 187 Misc. (GFE, Travel)
 Total 21214

FY 1999 Planned Program:

• 3862 Continue MIDS Development/Engineering Support
 • 1347 Program Management Activities for NTDR
 • 3027 Test Activities (NTDR)
 • 1621 Continue/Complete NTDR Program Hardware/Software Development
 192 Misc. (GFE, Travel)
 Total 10049

B. Project Change Summary

FY1997 President's Budget
 Appropriated Value
 Adjustments to Appropriated Value
 FY1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
5798	20169	22884	10907					
5856	19745							
-157								
5699	19632	21214	10049					

C. Other Program Funding Summary

OPA2, BU1400

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
44563	67927	57165	55676	42910	40625	39525	50522	
								Cont

D. Schedule Profile

Class 2M LRIP Award
 Class 2M DT/OT/MS Tests Start
 Class DT/OT/MS Tests Completion
 Class 2M FRP Decision
 Class 2M FRP Contract Award

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	1	2	4	2	4	1	2
X*	X*	X*	X					3
								4

Project D370

Page 3 of 9 Pages

Exhibit R-2 (PE 0603713A)

517

Item 51

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE												PROJECT
4 - Demonstration and Validation		0603713A Army Data Distribution System												D370
D. Schedule Profile		FY 1996			FY 1997			FY 1998			FY 1999			
		1	2	3	4	1	2	3	4	1	2	3	4	
Start FY94 EDM Delivery														
Complete FY94 EDM Delivery														
Class 2M LRP Delivery														
Class 2M FRP Delivery														
Start Fielding EDM Terminals														
Complete Fielding EDM Terminals														
MIDS Development Test														
MIDS OT/Multiservice Test														
MIDS Transition Decision														
MIDS Contract Award														
NTDR Award														
NTDR Option Award														
NTDR Operational Assessment														
NTDR IOT&E**														
Complete NCS-E(D) OT														

*Event has been completed

**NTDR IOT&E Proposed from FY00

Page 4 of 9 Pages

Exhibit R-2 (PE 0603713A)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D370

	FY 1996	FY 1997	FY 1998	FY 1999	Total
A. Project Cost Breakdown					
Contractor Engineering Support	4323	16201	17078	7010	
Program Management Support	730	1588	2218	1539	
Miscellaneous (NTDR-GFE)	125	0	0	0	
Testing	521	1392	1918	1500	
SBIR/STTR		451			
Total	5699	19632	21214	10049	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SBIR/STTR	TBD	TBD	7239	7239			451	2700	1527	3012	451
NTDR System Integration Science	MIPR	AUG 96	151	151	0	151	0	0	0	0	151
Application International	MIPR	TBD	7492	7492	0	0	476	2595	3862	556	7489
Misc. Venntronix Corp, Eatontown, NJ	MIPR	APR 96	420	420	0	420	0	0	0	0	420
Lockheed/Martin ITT Ft Wayne	MIPR	MAR 97	2001	2001	0	1380	617	0	0	0	1997
TBD	C/CPFF	JAN 96	31438	31438	0	2337	15108	11783	1621	500	31439
VISICOM	TBD	TBD	9057	9057	0	0	0	0	0	9057	9057
Support and Management Organizations	SS/CPFF	JUN 96	35	35	0	35	0	0	0	0	35
Misc.	MIPR	DEC 95	125	125	0	125	0	0	0	0	125
Misc.	MIPR	TBD	2128	2128	0	0	0	0	0	2128	2128
Misc.	MIPR	FEB 96	7093	7093	0	730	1588	2218	1539	1009	7084

Project D370

Page 5 of 9 Pages

Exhibit R-3 (PE 0603713A)

519

Item 51

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603713A Army Data Distribution System

PROJECT

D370

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
EPG	MIPR		0	0	0	0	0	0	0	0	0
EPG	MIPR	MAY 96	4916	4916	0	98	1392	1918	1500	0	4908
EPG	MIPR	FEB 96	423	423	0	423	0	0	0	0	423
Government Furnished Property: N/A											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
						4323	16652	17078	7010	13125	58188
						855	1588	2218	1539	3137	9337
						521	1392	1918	1500	5331	5331
						5699	19632	21214	10049	16262	72856

Government Furnished Property: N/A

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

Project D370

Page 6 of 9 Pages

Exhibit R-3 (PE 0603713A)

520

Item 51

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D2QT

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2QT EPLRS/JTIDS Operational Test	661	3538	0	0	0	0	0	0	0	4199

A. Mission Description and Budget Item Justification: This project finances the direct costs of planning and conducting operational testing and evaluation of the EPLRS/JTIDS by the Operational Test and Evaluation Command (OPTEC). JTIDS is an Acquisition Category (ACAT) I system with an Initial Operational Test and Evaluation (IOT&E) beginning in 1 QTR FY97. Operational Testing is conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system.

FY 1996 Accomplishments:

- 497 JTIDS OT Planning
- 150 JTIDS OT Evaluation Planning
- 14 OT Unit (Test Players) Support
- Total 661

FY 1997 Planned Program:

- 2897 Conduct JTIDS OT
- 337 JTIDS OT Evaluation
- 217 OT Unit (Test Players) Support
- 87 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 3538

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
678	3653	10	
685	3538		
-24			
661	3538	0	

Change Summary Explanation: Funding - FY 98 - Realigned to higher priority programs (-10)

Project D2QT

Page 7 of 9 Pages

Exhibit R-2 (PE 0603713A)

521

Item 51

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0603713A Army Data Distribution System

D2QT

D. Schedule Profile

$$\begin{array}{c} 1 \\ 4 \end{array} X^*$$

FY 1998
2 3

FY 1999
2 3

Conduct JTIDS OT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D2QT

[illegible]

Project D2QT

Page 9 of 9 Pages

Exhibit R-3 (PE 0603713A)

523

Item 51

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603745A Tactical Electronic Support Systems -
Advanced Development (TIARA)

PROJECT

D535

COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D535	Intelligence Fusion Analysis Demonstration	5630	3941	0	0	0	0	0	0	0	20104

A. Mission Description and Budget Item Justification: This Program Element funds application and validation of advanced computer software and hardware technologies to intelligence fusion analysis functions and prototype development, integration and evaluation of improved tactical intelligence fusion capabilities. This project supports the urgent requirement for an automated tactical intelligence processing system through technology insertion into, and development and evaluation of, prototype upgrades to the All Source Analysis System (ASAS), both during development and after fielding and therefore is appropriately placed in Budget Activity 4.

Acquisition Strategy: This project consists of studies, prototype development and evaluation of the integration of tactical intelligence fusion capabilities into existing systems. The efforts are for joint advanced technology research via contractors, Joint Propulsion Laboratory (JPL), a Federally Funded Research and Development Center (FFRDC), and some funds flowing down to colleges and universities as grants under oversight of JPL.

FY 1996 Accomplishments:

- 3000 Support battlefield visualization technology demonstration. Developed and evaluated Army Warfighter Experiments and the joint precision strike demonstration program of advanced large screen, automated graphical displays which provided enhanced situational awareness for tactical commanders.
- 1000 Continued to investigate, develop and apply advanced technologies to intelligence fusion prototypes for expanded capabilities and performance in the areas of dynamic situation development/assessment/prediction, collection management, and advanced analysis and correlation. This included continued streamlined integration of collection management tools for more automated, responsive tactical support; extended CI/HUMINT analysis prototype to include automated analysis tools, incorporating the advanced template correlation techniques used in the situation assessment prototype where appropriate; developed and integrated state-of-the-art video photogrammetry tools in support of battle damage and low intensity situation assessment.
- 780 Continued to evaluate, configure and integrate the high-performance, expanded tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development.
- 850 Continued to support the development, evaluation and refinement of operational prototypes of functional and performance upgrades/improvements to ASAS and their integration into mainline ASAS development and acquisition per the Joint Prototyping Plan.
- Total 5630

Project D535

Page 1 of 4 Pages

Exhibit R-2 (PE 0603745A)

524

Item 52

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603745A Tactical Electronic Support Systems -
Advanced Development (TIARA)

PROJECT

D535

FY 1997 Planned Program:

- 500 Continue to investigate, develop and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high-performance, expanded intelligence fusion capabilities.
 - 2495 Continue to evaluate, configure and integrate tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development.
 - 850 Continue to support the development, evaluation and refinement of ASAS operational prototypes and their integration into mainline ASAS development and acquisition per the Joint Prototyping Plan.
 - 96 Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)
- Total 3941

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	5776	2025	0	0
Appropriated Value	5937	3941		
Adjustments to Appropriated Value	-307	0	0	0
FY1998 Pres Bud Request	5630	3941	0	0

Summary Change Explanation: Funding - FY 97 (+1916) funds to evaluate Integrated Battlefield Intelligence Server (IBIS) developed by DARPA for integration into the ASAS program.

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Expanded Tech Base Prototypes								
- Interface Adv Spt Assmt with ASAS								
Block II								
- Integrate HUMINT Anal Spt into ASAS								
Operational Prototype								

X*

X

X*

Project D535

Page 2 of 4 Pages

Exhibit R-2 (PE 0603745A)

525

Item 52

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										
BUDGET ACTIVITY					DATE		PROJECT			
4 - Demonstration and Validation					February 1997		D535			
PE NUMBER AND TITLE										
0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)										
D. Schedule Profile										
					FY 1996		FY 1997		FY 1998	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
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					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY 1999	
					FY 1999		FY 1999		FY	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603745A Tactical Electronic Support Systems -
Advanced Development (TIARA)

D535

FY 1996

FY 1997

FY 1998

FY 1999

A. Project Cost Breakdown

Prototype Development Efforts

SBIR/STTR

Total

5630

3845

96

3941

B. Budget Acquisition History and Planning Information: -

Contractor or

Contract

Government Method/Type Award or Performing

or Funding Obligation Activity

Activity Vehicle Date

Product Development Organizations

JPL

EWA

Misc. Contracts

SBIR/STTR

Support and Management Organizations: None

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project Office EAC

Prior to FY 1996

Total

FY 1996

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

15444

2940

1624

96

10533

970

2940

1624

96

3941

5630

3941

20104

20104

Project D535

Page 4 of 4 Pages

Exhibit R-3 (PE 0603745A)

527

Item 52

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603747A Soldier Support and Survivability									
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		6709	6541	7557	7680	9235	8971	11576	10497	Continuing	Continuing
DC09 Unit/Organizational Equipment		2126	1289	1955	1737	2025	1989	2033	1564	Continuing	Continuing
D610 Food Advanced Development		2050	1905	2263	2569	3097	3342	3744	3761	Continuing	Continuing
D669 Clothing and Equipment		2533	3347	3339	3374	4113	3640	5799	5172	Continuing	Continuing

Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, fabric shelters, food, food and field service equipment which will enhance soldier battlefield effectiveness, survivability, sustainment and quality of life. Program element supports advanced development of a new generation of field service support items and shelters, including collective protection and shelter heaters for unit/organizational use to enhance the quality of life of field soldiers and the ability to project forces to spartan environments. Program element also supports advanced development of individual clothing and equipment items to lighten the soldier's load and incorporate protection against chemical and biological agents, thermal nuclear flash, ballistic threats, visual and electronic detection and environmental hazards. The projects in this Program Element focus on efforts to demonstrate general military utility to include demonstration and validation and are therefore correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

DC09

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC09 Unit/Organizational Equipment	2126	1289	1955	1737	2025	1989	2033	1564	Continuing	Continuing

A. Mission Description and Justification: Develop and field soft shelters, showers, latrines and heaters to improve unit sustainability and combat effectiveness.

Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and Production.

FY 1996 Accomplishments:

- 381 Redesign Ammunition Solar Covers (ASC) Type I to meet both Type I and Type II requirements to improve reliability and stability of munitions in hot environment, completed Technical Testing / Operational Testing (TT/OT). Prototyped General Purpose Solar Cover (GPSC) and conducted TT/OT on single solution design. Prepared concept designs for user review of General Purpose Solar Cover which provides lightweight, solar protection that is rapidly erectable and easy to use.
- 465 Performed Early User Testing, downselected best candidate, and initiated TT/OT for the Lightweight Maintenance Enclosure (LME) to improve field maintenance capability and equipment readiness.
- 259 Completed design and procured test prototypes for the Ballistic Protective System (BPS) to reduce vulnerability of palletized supplies.
- 142 Redesign frame system and assessed seaming technologies for the Modular General Purpose Tent System (MGPTS) Preplanned Product Improvement (P3I) to provide dual support options and interchangeable components for increased flexibility.
- 440 Completed TT/OT on the Containerized Self-Service Laundry to increase quality of life in remote field conditions.
- 439 Built prototypes and conducted TT/OT on the Space Heater Arctic (SHA) and Space Heater Small (SHS) to increase safety, reliability, and efficiency of field heaters.
- Total 2126

FY 1997 Planned Program:

- 275 Complete development and Type Classify (TC) the Modular ASC and GPSC, prepared LRIP Plan.
- 130 Complete development and Type Classify the LME, prepare LRIP and Production Contracts.
- 340 Complete TT/OT BPS.
- 512 Complete development of the thermoelectric capability for SHS for integration into the Family of Space Heaters for improved heat distribution and increased efficiency. Type Classify SHA and SHS and transition to production. Complete performance specification.
- 32 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 1289

Project DC09

Page 2 of 16 Pages

Exhibit R-2 (PE 0603747A)

529

Item 53

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

DC09

FY 1998 Planned Program:

- | | |
|------|---|
| 207 | Complete development and TC BPS, complete performance specification and transition to production. |
| 360 | Conduct market survey of the Family of Field Latrines (FOFL). Procure prototypes of the Maturing Theater Latrine (MTL) and conduct test and evaluation. |
| 450 | Procure modified non-developmental item (NDI) candidate prototypes of the Aviation Maintenance Shelter (AMS) and conduct technical testing. |
| 150 | Conduct market survey and procure prototypes of the Initial Deployment Shower (IDS) and Water Heater and conduct concept test and evaluation. |
| 680 | Award development contract for prototype air beam technology shelter including a lightweight flooring system. |
| 108 | Update market survey of commercial technologies for a Modular Deck System (MDS), prepare program documents, and build prototype. |
| 1955 | Total |

FY 1999 Planned Program:

- | | | |
|---|------|---|
| • | 300 | Complete test and evaluation of the FOFL and Type Classify the performance specification. |
| • | 450 | Conduct operational testing of the AMS and Type Classify the performance specification. |
| • | 300 | Procure prototypes and evaluate the IDS. |
| • | 376 | Complete prototype fabrication and conduct test and evaluation of the AMS P3I Shelter. |
| • | 311 | Update MDS prototype, initiate Development Test/Operational Test. |
| • | 1737 | Total |

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 BES/ Pres Bud Request

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
2180	1316	2797	1869
2241	1289		
-115			
2126	1289	1955	1737

C. Other Program Funding Summary

RDTE, 0604713.DC40, Unit/Organizational
Equipment

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost
3003	1746	1795	1811	1841	2026	2064	2072	Cont	Cont

Project DC09

Page 3 of 16 Pages

Exhibit R-2 (PE 0603747A)

Item 53

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

DC09

D. Schedule Profile

Type Classify SHA and SHS
 Complete TT/OT of Ammunition Cover
 Type Classify Ammunition Solar Cover
 Complete TT/OT for Containerized Self-
 Service Laundry and Type Classify
 Type Classify BPS and transition into
 production
 Conduct market survey on FOFL.
 Conduct test and evaluation on MIDL
 and MTL prototypes
 Procure and conduct TT on AMS
 prototypes
 Conduct test and evaluation on IDS
 Type Classify AMS
 Conduct test and evaluation on AMS P3I
 Type Classify IDS
 Type Classify FOFL
 Type Classify LME
 *Milestone Complete

1
FY 1996
2 34
X*FY 1997
2 3
XX
XFY 1998
2 34
XFY 1999
2 34
XFY 1999
2 34
X

Project DC09

Page 4 of 16 Pages

Exhibit R-2 (PE 0603747A)

531

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT		
BUDGET ACTIVITY										PE NUMBER AND TITLE			DC09	
4 - Demonstration and Validation										0603747A Soldier Support and Survivability				
<u>A. Project Cost Breakdown</u>										FY 1996	FY 1997	FY 1998	FY 1999	
Primary Hardware										2126	1257	1955	1737	
SBIR/STTR											32			
Total										2126	1289	1955	1737	
<u>B. Budget Acquisition History and Planning Information</u>														
<u>Performing Organizations</u>														
Contractor or	Contract													
Government	Method/Type	Award or	Performing											
Performing	or Funding	Obligation	Activity											
Activity	Vehicle	Date	EAC											
<u>Product Development Organizations</u>														
SSCOM	In-House													
Hunter Mfg	Various	Various												
Guild Assoc.														
Weatherhaven														
Hansen Weather														
GTS														
ARO	MIPR													
TRADOC														
VA Med Ctr														
McClellan AFB														
Army Nat'l Guard														
<u>Support and Management Organizations</u>														
SSCOM														
<u>Test and Evaluation Organizations</u>														
TECOM/YPG														
SBIR/STTR														
Government Furnished Property: None														
Total										1016	732	807	711	3266
										700	350	821	760	2631

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

DC09

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

1786

190

150

2126

1082

95

112

1289

1658

97

200

1955

1501

86

150

1737

6027

468

612

7107

Project DC09

Page 6 of 16 Pages

Exhibit R-3 (PE 0603747A)

533

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603747A Soldier Support and Survivability								D610	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D610	Food Advanced Development	2050	1905	2263	2569	3097	3342	3744	3761	Continuing	Continuing
<p>A. Mission Description and Justification: Development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and Operation & Support (O&S) costs of subsistence support for service personnel. Enhance rations by increasing quality, acceptability and variety. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuel and decrease fuel and water requirements. Program is reviewed and validated twice annually by the DoD Food and Nutrition Research and Engineering Board as part of the Joint Service Food Program. Conduct advanced development of improved subsistence and subsistence support items to enhance soldier effectiveness and quality of life in all four Services as part of an integrated DoD Food Research, Development, Test, Evaluation and Engineering (RDTE&E) program.</p> <p>Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and procurement.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 580 Conducted user evaluation of software developed to automate the Joint Service Recipe System to allow for timely electronic release of updated/new recipes. 265 Completed technical and user testing of improved Air Force food service refrigeration system to provide highly mobile, efficient and reliable field refrigeration. Transitioned the technology data package (TDP) to procurement. 608 Developed and conducted user evaluations of high potential individual and group ration components. Transitioned components with high acceptance to fielded rations, improving ration quality and increasing available menus. Identified components and developed medical supplement for the Unitized Group Ration (UGR) to increase logistical efficiency of medical field feeding. 100 Conducted user testing of new Mobility Enhancing Rations Components (MERC) to increase readiness, ease logistical burden, and improve ration quality. 60 Conducted market survey and developed packaging system for Ration Snack Pack to increase acceptability of operational rations. 225 Completed development of Long Range Patrol Rations to minimize weight and volume and transitioned to procurement. Identified and evaluated intrapackage modifiers for new composite packaging for rations that will increase consumption and field troop quality of life. 212 Evaluated new shelters for Kitchen Company Level Field Feeding-Enhanced. Developed/fabricated prototype components for Mobile Kitchen Trailer-Improvement program to meet future field feeding requirements to improve system performance in all environments. <p>Total 2050</p>											

Project D610

Page 7 of 16 Pages

Exhibit R-2 (PE 0603747A)

534

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

D610

FY 1997 Planned Program:

- 138 Complete pilot study of electronic recipe distribution and begin transition of new/approved recipes to the Services using the automated Joint Service Recipe System.
- 718 Identify and conduct user testing of improvements for individual and group rations. Transition selected heat and serve ration components and Meals Ready to Eat improvements, increasing menu variety. Conduct user evaluation of Snack Packs and design 12 Meal Cold Weather menus. Draft preparation manual for medical supplement for the UGR.
- 288 Design four MRE ration alternatives and conduct initial studies to determine the effects of portion size and variety on acceptance/intake.
- 147 Conduct user evaluations of MERC to provide eat-on-the-move capability. Procure test components for field test.
- 143 Perform technical feasibility testing (TFT) on NDI waste reduction/handling equipment which will reduce the field back-haul and trash removal requirements and transition optimum system to procurement.
- 377 Initiate design and fabrication of Marine Corps Rapid Deployment Kitchen (RDK) based on centralized heating technology providing highly mobile, efficient field feeding capability.
- 47 Evaluate Thermally Efficient Field Serving Equipment to optimize food quality and transition Procurement documentation to Marine Corps for procurement.
- 47 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 1905

FY 1998 Planned Program:

- 386 Fabricate Non-electric Field Refrigerator prototype, conduct technical user testing and transition to procurement.
- 474 Complete fabrication and initiate test and evaluation of the Rapid Deployment Kitchen (RDK).
- 176 Design and fabricate specific applications for a Catalytic Diesel Vaporizer (CDV) to effectively integrate with commercial off the shelf food service equipment.
- 164 Conduct demonstration/field test of Horizontal, Form, Fill, Seal (HFFS) food trays as alternatives to metal traycans.
- 538 Identify and conduct user testing of improvements for individual and group ration systems to improve acceptability and enhance combat effectiveness. Transition selected heat and serve ration components and MRE improvements, increasing menu variety. Transition ration pack to procurement. Conduct user evaluation and transition medical supplement for the UGR to procurement. Update B-ration menu.
- 275 Field test MERC to quantify warfighter acceptability / mobility enhancement and transition to procurement.
- 250 Prepare redesigned MRE ration prototypes to minimize weight/cube/cost and conduct initial field test to determine effect on level of acceptance and consumption.

Total 2263

Project D610

Page 8 of 16 Pages

Exhibit R-2 (PE 0603747A)

535

Item 53

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

D610

FY 1999 Planned Program:

- 308 Fabricate prototype Marine Corps Expeditionary Field Feeding Delivery System
- 280 Complete testing of the Catalytic Diesel Vaporizer and transition to production.
- 250 Develop new system concepts for the Field Feeding Unit - Expendable.
- 225 Develop company-sized kitchen and fabricate prototype of the Mounted Kitchen, Company Level Field Feeding.
- 67 Conduct market survey and evaluate prototypes of the Beverage Cooling Device (BCD) to optimize soldier hydration.
- 200 Complete storage studies/demonstrations of glass coated polymeric tray with easy open lid to refine concepts, ensure high acceptability and optimize functionality and affordability.
- 650 Continue to identify and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and MRE improvements, increasing menu variety.
- 339 Conduct field tests in different environments to establish effectiveness of selected performance enhancing ration components (PERCs) and supplements, demonstrate overall producibility and suitability of PERCs-based rations and transition to procurement.
- 250 Complete ration redesign and conduct follow-up field testing to demonstrate improved acceptance/consumption and reduced logistic burden.

Total	2569
-------	------

B. Project Change Summary.

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
2103	1946	2429	2774

C. Other Program Funding Summary:

RDTE, 0604713.D548, Military Subsistence

System

OPA 3, MA8050, Items Less Than \$2.0M (CSSEO)

OPA 3, MA5800, Refrigeration Equipment

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To <u>Compl</u>	Total <u>Cost</u>
802	792	884	1294	1643	1765	1877	1884	Cont	Cont
1467	2024	1334	4131	3431	5389	15507	15280	Cont	Cont
2481	4297		1986	981	981	995	1992	Cont	Cont

Project D610

Page 9 of 16 Pages

Exhibit R-2 (PE 0603747A)

536

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

D610

D. Schedule Profile

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Conducted user tests of Mobility								
Enhancing Ration Components (MERC)								
Transition heat and serve ration and MRE improvements to procurement								
Complete TFT of waste handling equip								
Fabricate USMC field kitchen based on centralized heating technology								
Transition Long Range Patrol Rations (LRPR) to procurement.								
Complete fabrication/start testing on the RDK								
Complete testing of the Catalytic Diesel Vaporizer								
Evaluate prototypes of the Beverage Cooling Device								
Complete Technical/User Testing of Non Electric Field Refrigerator								
Initiate development of Mounted Company Level Kitchen								
* Milestone Complete								

Project D610

Page 10 of 16 Pages

Exhibit R-2 (PE 0603747A)

537

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

D610

A. Project Cost Breakdown

Primary Hardware Development

SBIR/STTR

Total

FY 1996

2050

FY 1997

1858

47

FY 1998

2263

FY 1999

2569

2569

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1996

1424

326

FY 1997

1145

380

FY 1998

1326

424

FY 1999

1538

453

Budget to

Complete

Cont

Total

Program

5433

1583

Product Development Organizations

SSCOM

GTS

Hunter Mfg

SSL

GSA

OGA

MIPR

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

TECOM/OGA

SBIR/STTR

100

200

97

236

47

113

400

128

450

Cont

Cont

438

1286

47

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

1750

100

200

1525

97

283

1750

113

400

1991

128

450

2050

2263

7016

438

1333

8787

Project D610

Page 11 of 16 Pages

Exhibit R-3 (PE 0603747A)

538

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

D669

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D669 Clothing and Equipment	2533	3347	3339	3374	4113	3640	5799	5172	Continuing	Continuing

A. Mission Description and Justification Use state-of-the-art technology to develop improved clothing and individual equipment items to enhance the effectiveness, lethality, sustainability, survivability and quality of life of the individual soldier.

Acquisition Strategy: Developments transition to engineering and manufacturing development (EMD) and then to production.

FY 1996 Accomplishments:

- 100 Conducted market survey, updated requirements document, revised acquisition strategy for Advanced Laser Protective Systems (ALPS) [Formerly (SPECS) Preplanned Product Improvement (P3I)].
- 1304 Evaluated commercial samples and reviewed experimental models for design feasibility of the Modular Load System (MLS) (single point release mechanism) and the Body Armor Set Individual Countermine (BASIC) P3I Boot.
- 1129 Completed scoring conference, draft technical and health hazard assessment report, draft TC documents and procurement package for self-contained toxic environment protective outfit (STEPO).

Total 2533

FY 1997 Planned Program:

- 1447 Conduct market investigation, test new materials, develop initial design concepts for Reduced Weight Explosive Ordnance Disposal (EOD) Suit and Arctic Canteen.
- 1749 Develop initial design concepts, conduct technical and early user evaluations and downselect designs/materials for test prototypes for ALPS
- 75 Complete Phase II Development Test/Operational Test (DT/OT), type classify and transition to production STEPO.
- 76 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 3347

FY 1998 Planned Program:

- 950 Conduct early user evaluation, freeze design, fabricate test prototypes, and initiate DT/OT of the Reduced Weight EOD Suit and Arctic Canteen.
- 250 Fabricate test prototypes, conduct DT/OT, complete assessment reports, obtain Milestone III approval for the ALPS and transition to production.
- 250 Fabricate test prototypes and conduct Phase I of DT/OT for the Advanced Combat Helmet and transition to EMD.
- 245 Refine initial design concepts, conduct technical tests and early user evaluations, select materials and designs for the Concealable Body Armor, and transition to EMD.

Project D669

Page 12 of 16 Pages

Exhibit R-2 (PE 0603747A)

539

Item 53

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

PROJECT

D669

FY 1998 Planned Program: (continued)

- 500 Conduct early user evaluation of materials and designs for an Advanced Combat Uniform and transition to EMD.
- 1144 Conduct market surveys, test new materials, develop designs, and test in early user evaluations an Advanced Special Purpose Ensemble and gloves for special missions.

Total 3339

FY 1999 Planned Program:

- 520 Complete DT/OT and assessment reports, obtain Milestone III approval, and transition the Reduced Weight EOD Suit and Arctic Canteen to production.
- 800 Evaluate materials, develop initial designs, and test Joint Service Modular Eye Protection System (MEPS) in an early user evaluation.
- 2054 Fabricate test prototypes, conduct Phase I of DT/OT, and transition the Advanced Special Purpose Ensemble and gloves for specialized missions to EMD.

Total	3374
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B. Project Change Summary

FY 1997 President's Budget	3415	3418	3590	3650
Appropriated Value	3510	3347		
Adjustments to Appropriated Value	-977			
FY 1998 Pres Bud Request	2533	3347	3339	3374

Change Summary Explanation: FY 96 (-882) reduction realigned to a higher priority requirement.

C. Other Program Funding Summary:

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Compl</u>	<u>Cost</u>
									Cont	Cont
RDTE, 0604713.DL40, Clothing & Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Cont	Cont
OMA, 114092000, Central Funding & Fielding	40565	87739	42405	54222	79734	82242	84025	85848	Cont	Cont

D. Schedule Profile

D. <u>Schedule Profile</u>														
Complete Phase II of DT/OT and Assessment Reports														
	FY 1996			FY 1997			FY 1998			FY 1999				
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3

Complete Phase II of DT/OT and Assessment Reports
and Type Classify STEPO
Develop design concept for ALPS and ACH

X

Project D669

Page 13 of 16 Pages

Exhibit R-2 (PE 0603747A)

540

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)													DATE	February 1997	PROJECT													
BUDGET ACTIVITY													PE NUMBER AND TITLE				D669											
4 - Demonstration and Validation													0603747A Soldier Support and Survivability															
D. Schedule Profile													FY 1996				FY 1997				FY 1998				FY 1999			
													1 2 3 4				1 2 3 4				1 2 3 4				1 2 3 4			
Develop design concepts for SPECS P3I and Advanced Combat Helment (ACH)													X*															
Conduct technical and early user evaluation for SPECS P3I and ACH																	X											
Select test prototype designs for SPECS P3I and ACH																					X							
SPECS P3I test items//DT and OT and reports//																					X				X			
Milestone III and transition to procurement																												
ACH test items//Phase I DT and OT and transition to EMD																					X				X			
Evaluate commercial samples for MLS													X*															
Review experimental MLS prototypes for feasibility																												
Evaluate commercial designs and use CAD/CAM for BASIC P3I Boot design													X*															
Conduct market survey for Reduced Weight EOD Suit and Arctic Canteen																	X*											
Test new materials, develop initial designs for Reduced Weight EOD Suit and Arctic Canteen																					X							
Early user evaluation of the Reduced Weight EOD Suit and Arctic Canteen//Test items//DT and OT and reports//Milestone III and transition to procurement																					X				X			
Initial designs of the Concealable Body Armor//																					X				X			
Technical tests and early user evaluation//Select materials and transition to EMD																												
Early user evaluation of materials and designs for the Advanced Combat Uniform//Analyze and transition to EMD																									X			
Market survey of an Advanced Special Purpose Ensemble and special mission gloves//Material tests//Designs and early user evaluation//Test prototypes//Phase I DT and OT and transition to EMD																					X				X			

Project D669

Page 14 of 16 Pages

Exhibit R-2 (PE 0603747A)

Project D669

Page 14 of 16 Pages

Exhibit R-2 (PE 0603747A)

541

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT				
4 - Demonstration and Validation		0603747A Soldier Support and Survivability								D669				
D. Schedule Profile		FY 1996		FY 1997		FY 1998		FY 1999						
Initial materials and designs for the Joint Service Modular Eye Protection System//Early user evaluation		1	2	3	4	1	2	3	4	1	2	3	4	X
* Completed Milestone														

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

D669

A. Project Cost Breakdown

Clothing and Equipment

SBIR/STTR

Total

FY 1996

2533

FY 1997

3271

76

3347

FY 1998

3339

FY 1999

3374

3374

B. Budget Acquisition History and Planning Information: Not applicable

Project D669

Page 16 of 16 Pages

Exhibit R-3 (PE 0603747A)

543

Item 53

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	PROJECT
4 - Demonstration and Validation		0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)										February 1997	D907
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D907 Tactical Exploitation of National Capabilities - Adv Dev		26796	25354	20920	23714	24751	29020	30920	31095	Continuing	Continuing		

A. Mission Description and Budget Item Justification: Supports the tactical commander's intelligence requirements for contingency force development and deep battle targeting as stated in Field Manual 100-5. Specific developments are managed within the Army's Tactical Exploitation of National Capabilities (TENCAP) program. The scope of the program is to leverage specific data and capabilities available from existing and emerging national and selected theater capabilities that meet stated Army tactical intelligence information and targeting needs. This project supports the advanced development/enhancement of the Electronic Tactical User Terminal (ETUT), Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Tactical Exploitation System (TES), and Advanced Electronic Processing and Dissemination System (AEPDS). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground Surface System (CIGSS) program. TES brings all of the existing and emerging Army TENCAP capabilities [AEPDS, Modernized Imagery Exploitation System (MIES), and Enhanced Tactical Radar Correlator (ETRAC)] into an integrated common baseline; downsized modular and scalable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems, including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D). Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II, and in the Army TENCAP Master Plan. This Program Element (PE) focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of TENCAP and is correctly placed in Budget Activity 4.

Acquisition Strategy: The Army Space Program Office (ASPO) strives for an acquisition environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices, and using commercial and government off the shelf software, ASPO minimizes risk while maximizing efficiency. Strong user involvement, a robust operations and maintenance program and a vigorous technology insertion effort ensure programmatic success. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by government and contractor personnel and facilities.

FY 1996 Accomplishments:

- 10550 Continued to pursue technology for the refinement of the TENCAP Common Baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios such as upgrades to Communication System Processor (CSP) to incorporate Tactical Packet Network (TPN) and Defense Switched Network (DSN) connectivity, the Demand Assigned Multiple Access (DAMA) appliqué to SUCCESS radios and support to the Joint Collection Management Tool (JCMT).
- 5596 Initiated design concept and prototype development of Tactical Exploitation Systems (TES) with state-of-the-art hardware and software.

Project D907

Page 1 of 5 Pages

Exhibit R-2 (PE 0603766A)

544

Item 54

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)

D907

FY 1996 Accomplishments: (continued)

- 2434 Completed advanced development effort to retrofit ETUTs with enhanced MITT hardware and software.
- 5120 Continued support to TENCAP program management with administrative activities [e.g., FFRDC (Aerospace), ASPO, systems engineering technical support (SETA), and Topographic Engineering Center (TEC)].
- 3096 Continued support to efforts being developed under PE 0305154D (DARPA) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- Total 26796

FY 1997 Planned Program:

- 8082 Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios
- 10027 Initiate advanced development efforts for ground processing technologies for new national sensors capabilities that will be incorporated into TES
- 5077 Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- 1579 Continue support to efforts being developed under PE 0305154D (DARPA) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- 589 Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)
- Total 25354

FY 1998 Planned Program:

- 5327 Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios. In addition to staying current with national and theater capabilities, will include integration of Defense Switched Network (DSN) and Defense Message System (DMS) into the TENCAP systems.
- 8775 Continue advanced development of TES Program
- 4432 Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- 2386 Continue support to efforts being developed under PE 0305154D (DARPA) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- Total 20920

FY 1999 Planned Program:

- 5802 Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios. In addition to staying current with National and Theater Capabilities, will include integration of Defense Switched Network (DSN) and Defense Message System (DMS) into the TENCAP systems
- 9849 Continue advanced development of TES Program.
- 5258 Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- 2805 Continue support to efforts being developed under PE 0305154D (DARPA) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
- Total 23714

Project D907

Page 2 of 5 Pages

Exhibit R-2 (PE 0603766A)

545

Item 54

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1997	PROJECT					
BUDGET ACTIVITY		PE NUMBER AND TITLE				D907					
4 - Demonstration and Validation		0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)									
B. Project Change Summary		FY 1996	FY 1997	FY 1998	FY 1999						
FY 1997 President's Budget		27460	26060	23200	27094						
Appropriated Value		27738	25354								
Adjustments to Appropriated Value		-942									
FY 1998 BES/Pres Bud Request		26796	25354	20920	23714						
Change Summary Explanation: Funding - FY 98 & FY 99 reductions are for Spares Pricing Adjustment, T&E Streamlining and civilian salary reduction as result of HQDA redesign. (FY 98 -2280/FY 99 -3380).											
C. Other Program Funding Summary		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5											
PE 64766.D909 TENCAP		23266	15235	19113	19531	26094	25097	28203	28359	Cont	Cont
RDTE, D Budget Activity 7											
PE 0305154D DARP		41526	50287	0	0	0	0	0	0	Cont	Cont
PE 0305208D DARP				30433	28175	22214	24108	23583	23179		
Other Procurement Army, OPA-2											
BZ 7315 TENCAP		4473	1756	1679	1728	4598	13703	14779	16822	Cont	Cont
Procurement, Defense Wide											
PE 0305154D DARP		80822	89945	0	0	0	0	0	0	Cont	Cont
PE 0305208D DARP				94070	81600	80576	71867	73926	75239		
D. Schedule Profile		FY 1996	FY 1997	FY 1998	FY 1999						
1	2	3	4	1	2	3	4	1	2	3	4
		X*									
Initiate Prototype Development for TES											
Complete Adv Dev of DAMA Appliqué into TENCAP Common Baseline											
SUCCESS Radios											
Initiate Integration of DSN/DMS into TENCAP Systems											
Complete Prototype Development TES Forward											

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)

PROJECT

D907

D. Schedule Profile

1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

FY 1996

FY 1997

FY 1998

FY 1999

Complete Integration of DSN/DMS into TENCAP System

2 3 4 X

*Denotes completed milestone

Project D907

Page 4 of 5 Pages

Exhibit R-2 (PE 0603766A)

547

Item 54

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
4 - Demonstration and Validation		0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)		D907
A. Project Cost Breakdown				
Common Baseline (*1)	FY 1996	FY 1997	FY 1998	FY 1999
TES	10550	8082	5327	5802
ETUT	5596	10027	8775	9849
ASPO In-House (*2, *3)	2434	0		
FFRDC	2507	2135	1995	1871
System Engineering (Contractor) (*2)	219	87	97	106
System Engineering (Government) (*2)	4115	3234	3692	5051
SBIR/STTR	1375	1200	1034	1035
Total	26796	25354	20920	23714
<p>(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARPA (PE 0305154D)].</p> <p>(*2) Approximately 40% of program management cost in FY 1996 through FY 1999 support efforts being developed under PE 0305154D.P531.</p> <p>(*3) The ASPO In-House support in this project also supports efforts being developed under PE 0604766A.D909.</p>				
B. Budget Acquisition History and Planning Information: Not Applicable				

Project D907

Page 5 of 5 Pages

Exhibit R-3 (PE 0603766A)

548

Item 54

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603774A Night Vision Systems - Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3167	2769	2939	2893	3298	4703	6003	6024	Continuing	Continuing
D131 Night Vision Systems Advanced Development	3167	2769	2939	2893	3298	4193	5150	5172	Continuing	Continuing
D598 LTASS*	0	0	0	0	0	510	853	852	Continuing	Continuing

*Erroneously placed in this PE, should be 0604716A. Title of project will change to Hi-Volume Map Production Equipment during the next budget submit.

Mission Description and Budget Item Justification: This program element encompasses the advanced development phase of the Army Acquisition cycle for Night Vision and Electro-Optic (NVEO) devices/systems and prepares them for engineering development. The key objective of this program is to provide NVEO devices/systems for acquisition and engagement of enemy targets at maximum weapon system ranges under degraded battlefield/weather conditions and in countermeasure environments. The efforts are centered around development of countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies. The LTASS program provides for market value analysis and development of high volume cartographic reproduction for table of organization and equipment (TOE) field topographic engineer companies. The focus of these efforts is on advanced technology development; therefore, this project is properly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603774A Night Vision Systems - Advanced

Development

PROJECT

D131

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D131 Night Vision Systems Advanced Development	3167	2769	2939	2893	3298	4193	5150	5172	Continuing	Continuing

A. Mission Description and Justification: This project encompasses the advanced development phase of the Army acquisition cycle for Night Vision and Electro-Optic (NVEO) devices/systems and prepares them for engineering development. The key objective of this program is to provide NVEO devices/systems for acquisition and engagement of enemy targets at maximum weapon system ranges under degraded battlefield/weather conditions and in countermeasure environments. The efforts are centered around development of countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies. This project provides the mechanism to transition tech base programs for electro-optical sensors to the engineering manufacturing development (EMD) phase of the acquisition cycle. This project provides the funding necessary to institute advances for product improvement or horizontal technology integration (HTI) to upgrade current capabilities.

Acquisition Strategy: The Long Range Advanced Scout Surveillance System and the Advanced Second Generation FLIR both utilize development contracts that were competitively awarded using best value source selection procedures.

FY 1996 Accomplishments:

- 550 Continued support for Stingray participation in the Advanced Warfighting Experiments (AWE) at Fort Hood.
- 1767 Continued Advanced Second Generation FLIR (SGF) improvements (i.e. Standard Advanced Dewar Assembly) for HTI B kit.
- 850 Developed alternative approaches to Long Range Advanced Scout Surveillance System (LRAS3) to support system EMD in FY 97.
- Total 3167

FY 1997 Planned Program:

- 302 Complete support for Stingray participation in exercises and final system disposition.
- 900 Commence Advanced Aviation SGF HTI B Kit trade studies.
- 1507 Develop Advanced SGF B kit features (e.g., frame integration and laser protection) for M2A3, M1A2 and LRAS3.
- 60 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2769

FY 1998 Planned Program:

- 1876 Complete Aviation B kit trade studies.
- 429 Demonstrate sight level ground B kit advanced capabilities.
- 634 Demonstrate advanced aviation SADA detector capability.
- Total 2939

Project D131

Page 2 of 5 Pages

Exhibit R-2 (PE 0603774A)

550

Item 55

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603774A Night Vision Systems - Advanced

D131

Development

FY 1999 Planned Program:

- 1021 Demonstrate sight level ground B kit advanced capabilities into M2A3, M1A2, and LRAS3.
- 1632 Develop ATR/ATC capability and interface with Aviation/Ground B kit.
- 240 Demonstrate Aviation B Kit Advanced capabilities.
- Total 2893

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999	Total
FY 1997 President's Budget	2879	2829	3151	3110	
Appropriated Value	2908	2769			
Adjustments to Appropriated Value	259				
FY 1998 Pres Bud Request	3167	2769	2939	2893	

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
PE 0602709A/Night Vision and Electro-Optical Technology RDTE, A Budget Activity 3	16442	16636	17304	19213	19183	19872	20287	20744	Continue	Continue
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 4	31142	29761	19299	19250	37651	33487	33135	29516	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5	37658	34870	33456	21255	21817	18692	27214	17414	Continue	Continue

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
1 Implement system participation in AWEs	2	3	1	2	4	2	4	1	3	4
Conclude participation in AWEs			X*							
Award Advanced Ground B kit features										
Demonstrate Ground B Kit Advance Capabilities (Test)				X			X			
Demonstrate integration of Ground B Kit Advanced capabilities on vehicles (Test)										X

Project D131

Page 3 of 5 Pages

Exhibit R-2 (PE 0603774A)

551

Item 55

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1997		PROJECT			
BUDGET ACTIVITY		PE NUMBER AND TITLE												PROJECT			
4 - Demonstration and Validation		0603774A Night Vision Systems - Advanced Development												D131			
		FY 1996				FY 1997				FY 1998				FY 1999			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<u>D. Schedule Profile</u>																	
Develop ATR/ATC capability/interface with Aviation and Ground B Kit																	
Award Aviation trade study contract(s)																	
Finalize Aviation B kit trade study																	
Demonstrate Advanced Aviation SADA																	
Detection capability (Test)																	
Demonstrate Aviation Advanced capabilities (Test)																	
*Milestone Completed																	

Project D131

Page 4 of 5 Pages

Exhibit R-2 (PE 0603774A)

552

Item 55

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603774A Night Vision Systems - Advanced

D131

Development

	FY 1996	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown				
Primary Hardware Development	2336	1250	432	1433
Contractor Engineering / Trade Studies	0	900	1626	0
Government Engineering Support	225	212	225	225
Travel	45	40	40	40
Miscellaneous	86	29	33	37
Development Test & Evaluation	475	278	583	1158
SBIR/STTR		60		
Total	3167	2769	2939	2893

B. Budget Acquisition History and Planning Information: Not applicable

Project D131

Page 5 of 5 Pages

Exhibit R-3 (PE 0603774A)

553

Item 55

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603790A NATO Research & Development								D691	
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D691	NATO Research and Development	0	9755	13168	11169	11260	11846	12032	12246	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States, the North Atlantic Treaty Organization (NATO), and U.S. major non-NATO allies. This program element only funds the U.S. equitable share of the cooperative R&D project spent in the U.S. Projects are implemented with the allied partners through international agreements which define the scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. By technology sharing the program jointly develops equipment with our allies to improve operational efforts by achieving multi-national force compatibility through the use of similar equipment and improved interfaces. Funds support all the R&D costs including the identification of cooperative opportunities and administration of the program. All funds are used to pay for the U.S. work share in the United States at U.S. Government and U.S. contractor's facilities. This program focuses on international cooperative technology demonstration, validation, and interoperability of the Battlefield Combat Identification System, Force XXI Battle Command Brigade & Below (FBCB2)/Appliqué Systems, Adaptive Digital Beamforming for THAAD radars, helicopter helmet mounted displays, military network switching, PATRIOT Tactical Operations Center, improved combat vehicle propulsion, missile seeker electronic countermeasures, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, signal jamming subsystems, and is therefore correctly placed in Budget Activity 4. The final program will be reported separately as required by 10 USC 2350a(f).

FY 1996 Accomplishments: This effort funded in OSD PE 0603790D Project P790.

FY 1997 Planned Program:

- 2877 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Integrate the Battlefield Combat Identification System (BCIS) on armored vehicles, complete interoperability trials with FR, GE, and UK prototype systems in Munster, GE.
- 2005 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Implement, test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment.
- 1500 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Improve detection in severe Electronic CM environments. Extend narrowband ABFT techniques to THAAD radar, develop ABFT architectures and assess design trade-offs.
- 1200 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Improve helicopter helmet mount display and flight controls. Fabricate Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and flight tests.
- 405 **High Technology Switch (Partner: France):** Develop advanced interoperable Asynchronous Transfer Mode (ATM) switches for ATM communications field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Information Transition System(BITS).
- 385 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Develop system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyze interoperability elements and prepare pre-design specifications.

Project D691

Page 1 of 11 Pages

Exhibit R-2 (PE 0603790A)

554

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603790A NATO Research & Development

D691

FY 1997 Planned Program: (continued)

- 1050 **Fighting Vehicle Propulsion Technology Using Ceramic Materials (Partner: Japan):** Develop, test and characterize advance materials, including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena that provides a breakthrough in fighting vehicle diesel engine designs. The objective is to double combat propulsion system power density and fuel economy.
- 95 **Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program
- 238 SBIR/STTR
- Total 9755

FY 1998 Planned Program:

- 2791 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Continue to test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment.
- 816 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Continue improvement of detection in severe Electronic CM environments. Define ABFT technology insertion program for THAAD Radar objective system, to include beamforming algorithms and required hardware and software modifications. Publish final point design.
- 1428 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Continue to improve helicopter helmet mount display and flight controls. Fabricate Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and tests.
- 565 **High Technology Switch (Partner: France):** Continue development of advance interoperable Asynchronous Transfer Mode (ATM) switches for ATM communication field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Info Transition System (BITS).
- 66 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Continue the development of system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyze interoperability elements and prepare final specification.
- 2500 **Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan):** Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.
- 1020 **Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom):** Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.
- 1020 **Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan):** Develop a joint performance specification for a multifunctional eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Start brassboard design and subsystem development.
- 642 **Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom):** Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFATDS and Allies' systems.
- 510 **Laser Standoff Chemical Detector (LSCD) (Partner: France):** Develop detection technology for incorporation in a lightweight, vehicle mountable contamination monitoring system that can detect and quantify in a standoff mode all known types of chemical agent contamination.
- 510 **Advanced Penetrator Development In Tank Munitions (Partner: United Kingdom):** Develop an advanced kinetic energy penetrator to defeat upgraded tanks being equipped with Kinetic Energy/Explosively Reactive Armor (KE/ERA). Evaluate technologies and determine design capability.

Project D691

Page 2 of 11 Pages

Exhibit R-2 (PE 0603790A)

555

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation		0603790A NATO Research & Development	D691
FY 1998 Planned Program: (continued)			
•	335	Short Range Surface-to-Air Missile Guidance Technology (ROKSAM) (Partner: South Korea): Develop dual mode lock-on-after-launch guidance concepts, and test the concepts using existing seekers through hardware-in-the-loop simulations.	
•	305	Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom): Develop automated interfaces between US and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.	
•	355	TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom): Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.	
•	205	Next-Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany): Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.	
•	100	Report To Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program	
Total	13168		
FY 1999 Planned Program:			
•	2542	Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany): Continue to test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment.	
•	1830	Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan): Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.	
•	1020	Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom): Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.	
•	1020	Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan): Continue to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Fabricate subsystems and brassboard.	
•	1015	Next-Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany): Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.	
•	1015	TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom): Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.	
•	845	Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom): Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFA/TDS and Allies' systems.	
•	510	Laser Stand-off Chemical Detector (LSCD) (Partner: France): Develop technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.	
•	510	Advance Penetrator Development in Tank Munitions (Partner: United Kingdom): Develop an advanced penetrator, and potentially a common cartridge, to defeat modern tanks equipped with Kinetic Energy - Explosively Reactive Armor.	

Project D691

Page 3 of 11 Pages

Exhibit R-2 (PE 0603790A)

556

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603790A NATO Research & Development

D691

FY 1999 Planned Program: (continued)

- 355 **Electronic Warfare Simulation Common Set (Partner: Australia):** Develop a common set of characteristics and countermeasures for advanced missile guidance systems. Test results in hybrid software and hardware-in-the-loop simulations to determine survivability of new guidance systems.
- 305 **Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom):** Continue to develop automated interfaces between U.S. and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.
- 102 **Short Range Surface-to-Air Missile Guidance Technology (ROKSAM) (Partner: South Korea):** Develop dual mode lock-on-after-launch guidance concepts, and test the concepts using existing seekers through hardware-in-the-loop simulations.
- 100 **Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program

Total 11169

B. Project Change Summary

FY 1997 President's Budget Request

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

0

FY 1997

9963
9755

FY 1998

10207

FY 1999

7454

11169

Change Summary Explanation:

Funding: FY 1997; project decremented (-208) for undistributed congressional reductions

FY 1998: DOD program restructured to move ongoing Army cooperative projects from OSD PE to Army PE (+2961).

FY 1999: DOD program restructured to move ongoing Army cooperative projects from OSD PE to Army PE (+3715).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost 7700
RDTE, Defense-wide Appropriation										
0603790D NATO Cooperative R&D										

7700

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	4	1	2	3	4	1	2
2									3
3									4

Combat Identification Interoperability

Complete Fabrication and Integration

Trials and Demonstration Completed

Initial Data Report

Project D691

Page 4 of 11 Pages

Exhibit R-2 (PE 0603790A)

557

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)												DATE		February 1997		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE												0603790A NATO Research & Development		D691	
4 - Demonstration and Validation																	
D. Schedule Profile		FY 1996				FY 1997				FY 1998				FY 1999			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Command & Control Interoperability																	
Complete Hardware/Software Installation																	
Complete Lab Demo/Tests & Simulations																	
Complete Field Demonstration																	
Adaptive Beam Forming Technology																	
Complete Algorithms/Architecture						X											
Complete Wideband Subarray						X											
Complete Preliminary Point Design																	
Complete US Design Assessments																	
Complete UK Design Evaluation																	
Complete Final Point Design																	
CONDOR																	
Complete Integration Tests																	
Complete Flight Test & Evaluation																	
High Technology Switch																	
Complete Simulation and Commo Link																	
Complete Test & Evaluation Plan																	
Complete Architecture Test & Evaluation																	
Extended Air Defense																	
Complete Integration Analysis																	
Complete Trade-off Analysis																	
Fighting Vehicle Propulsion Technology																	
Contract Awards																	
Preliminary Engine Analysis Complete																	
Materials Characterization/Test Complete																	
Combustion Test and Analysis Complete																	
Focal Plane Array Countermeasures																	
Complete Missile Seeker Characterization																	
Mathematical Model Development																	
Complete Software Simulations																	
Develop Advanced CM Model																	

Project D691

Page 5 of 11 Pages

Exhibit R-2 (PE 0603790A)

Project D691

Page 5 of 11 Pages

Exhibit R-2 (PE 0603790A)

558

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	PROJECT							
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT							
4 - Demonstration and Validation		0603790A NATO Research & Development										D691							
D. Schedule Profile		FY 1996				FY 1997				FY 1998				FY 1999					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Cooperative Eyesafe Laser Project																			
Complete Performance Specification																			
Complete Subsystem Development																			
Complete Brassboard Integration																			
Artillery Systems Cooperation Activity																			
MOU Concluded																			
Complete Interface Requirements																			
Complete Phase I Technical Test																			
Complete Phase I Operational Tests																			
Complete Phase II Tests																			
ROKSAM																			
MOU Concluded																			
Complete Analysis Phase																			
Complete Design & Fabrication Phase																			
Low Level Air Picture Interface																			
Complete MOU Amendment(CA,NL,UK)																			
Complete Interface Development																			
Complete Operational Testing																			
AUTONAV																			
MOU Project Arrangement Concluded																			
Complete Prototype Design																			
Complete Fabrication & Integration																			
TACJAM-A																			
MOU Concluded																			
Complete Prototype Hardware Upgrades																			
Complete Systems Integration & Testing																			
Laser Standoff Chemical Detector																			
MOU Project Arrangement Concluded																			
Complete Analysis of Spectral Properties																			
Begin Laser Prototype Development																			
Advance Penetrator in Tank Munitions																			
MOU Project Arrangement Concluded																			
Project D691																			
										Exhibit R-2 (PE 0603790A)									

Exhibit R-2 (PE 0603790A)

Page 6 of 11 Pages

559

Item 56

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603790A NATO Research & Development

PROJECT

D691

D. Schedule Profile

FY 1996

1

2

3

4

1

2

3

4

1

2

3

4

1

2

3

4

Complete Penetrator Design Studies
Complete Penetrator Development & Test
Electronic Warfare Simulation Com Set
MOU Project Arrangement Concluded
Complete Phase 1 Tech. Assessment
Complete Digital Simulation Evaluation

X

X

X

Project D691

Page 7 of 11 Pages

Exhibit R-2 (PE 0603790A)

560

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603790A NATO Research & Development

PROJECT

D691

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Combat Identification Interoperability Demonstration (CIID)		2877		0
Command and Control Systems Interoperability (C ² SI)		2005	2791	2542
Adaptive Beam Form Technology (ABFT)		1500	816	0
Covert Night/Day Operations in Rotorcraft (CONDOR)		1200	1428	0
High Technology Switch Development (HTSD)		405	565	0
Extended Air Defense Command & Control Interoperability		385	66	0
Fighting Vehicle Propulsion Technology (Ceramic Materials)		1050	2500	1830
Focal Plane Array Countermeasures (FPACM)		0	1020	1020
Cooperative Eyesafe Laser Project (CELRAP)		0	1020	1020
Artillery Systems Cooperation Activities (ASCA)		0	642	845
Short Range Surface to Air Missile Guidance Technology		0	335	102
Low Level Air Picture Interface (LLAPI)		0	305	305
TACJAM-A Electronic Support Subsystem Upgrades		0	355	1015
Autonomous Vehicle Navigation Control System (AUTONAV)		0	205	1015
Laser Stand-Off Chemical Detector (LSCD)		0	510	510
Advance Penetrator Development in Tank Munitions		0	510	510
Electronic Warfare Simulation Common Set		0	0	355
Report To Congress		95	100	100
SBIR/STTR		238	0	0
Total		9755	13168	11169

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes Training	CPIF	Jan 94	1600	1600			1100	568	0	0	1668
Herdon, VA											

Project D691

Page 8 of 11 Pages

Exhibit R-3 (PE 0603790A)

561

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997
BUDGET ACTIVITY										PROJECT	
4 - Demonstration and Validation										D691	
Contractor or										PE NUMBER AND TITLE	
Contract										0603790A NATO Research & Development	
Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
McDonnell Douglas Mesa, AZ	CPIF	Nov 96	800	800			400	500	0	0	900
Quantum Research Huntsville, AL	FFP	May 95	350	350			300	50	0	0	350
CSC	CPFF	Aug 96	4800	4800			2075	3375	0	0	5450
Ft Washington, PA	CPAF	Mar 96	1313	1313			1267	0	0	0	1267
Redondo Bch, CA	CPFF	Feb 95	500	500			250	350	0	0	600
Madentech	CPFF	Aug 94	2920	2920			1300	680	384	560	2924
Shrewsbury, NJ	CPFF	Aug 94	150	150			150	0	0	0	150
Georgia Tech Atlanta, GA	CPFF	Mar 96	100	100			100	0	0	0	100
Dynetics Huntsville, AL	FFRDC	May 96	500	500			250	350	0	0	600
Mitre Boston, MA	CPFF	May 96	300	300			150	150	0	0	300
Wayne State Univ Detroit, MI	CPFF	Feb 96	450	450			250	200	0	0	450
Rutgers Univ Brunswick, NJ	CPFF	TBD	TBD	TBD			475	4915	7285	Cont	Cont
SRI Menlo Park, CA	Competitive Best Value	Dec 96	200	200			0	300	0	0	300
Nichols Research Huntsville, AL	CPFF	Dec 98	600	600			0	0	404	300	704
Nuclear Metals Inc. Concord, MA	CPFF										

Project D691

Page 9 of 11 Pages

Exhibit R-3 (PE 0603790A)

562

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997		PROJECT				
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT			
4 - Demonstration and Validation		0603790A NATO Research & Development						D691			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Aerojet Ordnance	CPFF	Dec 98	600	600			0	0	404	300	704
Jonesboro, TN											
Olin Ordnance	CPFF	Dec 98	100	100			0	0	154	50	204
St. Petersburg, FL											
Alliant	CPFF	Dec 98	70	70			0	0	139	35	174
Minnetonka, MN							238				238
SBIR/STTR											
Support and Management Organizations											
ATCOM	MIPR						100	100	204	Cont	Cont
Ft Eustis, VA											
CECOM	MIPR						150	250	254	Cont	Cont
Ft Monmouth, NJ											
TACOM	MIPR						150	250	254	Cont	Cont
Warren, MI											
ICPA	MIPR						200	300	304	Cont	Cont
APG, MD											
PM ADCCS	MIPR						100	0	0	0	100
Huntsville, AL											
PM THAAD	MIPR						200	0	0	0	200
Huntsville, AL											
LOGSA	MIPR						125	25	129	Cont	Cont
Huntsville, AL											
MICOM	MIPR						0	130	254	Cont	Cont
Huntsville, AL											
PM TMAAS	MIPR						0	50	154	Cont	Cont
Dover, NJ											
LOGSA	MIPR						25	25	134	Cont	Cont
Huntsville, AL											

Project D691

Page 10 of 11 Pages

Exhibit R-3 (PE 0603790A)

Project D691

Page 10 of 11 Pages

Exhibit R-3 (PE 0603790A)

563

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997
BUDGET ACTIVITY										PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation										0603790A NATO Research & Development	D691
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
AMSAA	MIPR						150	250	204	Cont	Cont
APG, MD							150	150	204	Cont	Cont
CECOM	MIPR										
Ft Monmouth, NJ											
Army Research Lab, APG, MD	MIPR						100	200	304	Cont	Cont
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
							8305	11438	8770	1245	Cont
							1050	1130	1687		Cont
							400	600	712		Cont
							9755	13168	11169	1245	Cont

Project D691

Page 11 of 11 Pages

Exhibit R-3 (PE 0603790A)

564

Item 56

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	12893	13104	7132	7450	5809	5898	9252	9583	Continuing	Continuing
DB32 Advanced Maintenance Concepts and Equipment	2136	2181	2656	2599	3026	3065	3454	3568	Continuing	Continuing
DB33 Cargo Handling and Mission Support Equipment	1356	2010	1931	2391	2783	2833	2997	3198	Continuing	Continuing
DB45 Aircrew Integrated Systems	9401	8913	2545	2460	0	0	2801	2817	Continuing	Continuing

Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS), formerly Aviation Life Support Equipment (ALSE). The projects in this Program Element support research efforts in the advanced development phase of the acquisition strategy and are correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603801A Aviation - Advanced Development								DB32	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB32	Advanced Maintenance Concepts and Equipment	2136	2181	2656	2599	3026	3065	3454	3568	Continuing	Continuing
<p>A. Mission Description and Justification: This project enhances utilization of current and future aircraft by improving the efficiency of maintenance (primarily in the area of diagnostics/prognostics) and servicing operations by validating new maintenance concepts to improve man machine interface, enhancing aircraft maintenance procedures and reducing operating and support costs. Included in the project are Digitized Aviation Logistics (DAL) elements such as: Portable Maintenance Aids (PMA), database management software, on-board diagnostics, digital source collector, health/usage monitoring system, trending analysis, and support infrastructure.</p> <p>Acquisition Strategy: This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through government testing (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 379 Demonstrated high confidence, automatic identification of voids, delaminations, and occlusions in composite structures. 97 Initiated follow-on effort to complete operational implementation and address Tri-Service issues for the knowledge-based automated Non-Destructive Inspection/Non-Destructive Test (NDI/NDT) inspection and repair procedures for composite components. 806 Completed the pre-production design and the first unit fabrication of the Advanced Boresight Equipment. 679 Initiated an effort via an integrated Army product team (IPT) and cooperative agreement with the four major U.S. helicopter manufacturers, to conceptualize and design an optimal infrastructure for a digitally enhanced aviation logistics environment. 47 Completed the acquisition and technical planning documentation for development of advanced portable maintenance module. 35 Completed joint Navy Helicopter Integrated Diagnostics System testing of seeded faults using vibration diagnostics to confirm a severely degraded high speed shaft condition and a bearing fault in an SH-60 main transmission module. 93 Completed a market survey to identify commercial off-the-shelf, environmentally safe, aircraft cleaning and deicing systems for evaluation. <p>Total 2136</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 82 Conduct seeded fault testing for mechanical system diagnostic and prognostic development. 1296 Complete an infrastructure definition for on-board diagnostics as part of a digital aviation logistics system. Develop an implementation plan for each aircraft and support system. 											

Project DB32

Page 2 of 15 Pages

Exhibit R-2 (PE 0603801A)

566

Item 57

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

PROJECT

DB32

FY 1997 Planned Program: (continued)

- 752 Initiate development of portable maintenance aids designed to utilize the original equipment three dimensional design database for diagnostics and repair, to support flexible scheduling of phased maintenance events, and to integrally incorporate the aircrew as part of the diagnostic and troubleshooting procedures.
- 51 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 2181

FY 1998 Planned Program:

- 375 Initiate wireless maintenance data network definition.
- 1870 Establish functional allocation for the critical elements of the digital aviation logistics system. Develop procedures and design the diagnostics evaluation program.
- 264 Complete PMA field evaluation and develop definition of fully integrated portable electronic aid.
- 147 Initiate on-condition maintenance credit definition process.
- Total 2656

FY 1999 Planned Program:

- 536 Develop virtual prototype of integrated digital maintenance infrastructure and evaluate feasibility of on-line technical expertise pools.
- 1431 Complete on-board diagnostics definition and demonstrate utility of logistical system interface.
- 335 Develop wireless maintenance data network equipment and interfaces.
- 297 Complete life extension procedures for on-condition maintenance.
- Total 2599

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2306	2228	2853	2806
Appropriated Value	2371	2181		
Adjustments to Appropriated Value	-235			
FY 1998 Pres Bud Request	2136	2181	2656	2599

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
RDTE,A Budget Activity 2 PE 0602211 Project	15340	19213	24410	27152	27132	28605	29712	30374	Compl
A47A Aeronautical and Aircraft Weapons Tech*									Cont
Total									Cost
									Cont

*Represents total funding in this PE, which only partially supports Project DB32.

Project DB32

Page 3 of 15 Pages

Exhibit R-2 (PE 0603801A)

567

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE			PROJECT	
4 - Demonstration and Validation					0603801A Aviation - Advanced Development			DB32	
D. Schedule Profile					FY 1997			FY 1998	
					FY 1997			FY 1999	
					FY 1997			FY 1999	
					FY 1997			FY 1999	
					FY 1997			FY 1999	
					FY 1997			FY 1999	
					FY 1997			FY 1999	
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					FY 1997			FY 1999	
					FY 1997			FY	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB32

A. Project Cost Breakdown

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Primary Hardware Development	700	370	420	358
Software Development	213	504	475	525
Systems Engineering	30	425	560	510
Integrated Logistics Support	126		85	110
DT/OT	343		100	115
Program Management	150	167	170	165
Research Personnel	479	549	734	718
Miscellaneous	95	115	112	98
SBIR/STTR		51		
Total:	2136	2181	2656	2599

B. Budget Acquisition History and Planning Information: Not applicable

Project DB32

Page 5 of 15 Pages

Exhibit R-3 (PE 0603801A)

569

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603801A Aviation - Advanced Development

PROJECT

DB33

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB33 Cargo Handling and Mission Support Equipment	1356	2010	1931	2391	2783	2833	2997	3198	Continuing	Continuing

A. Mission Description and Justification: This project develops equipment, practices, and procedures for the operational improvement of planning, loading, transport, and off-loading of helicopter cargo in all-weather, around the clock combat scenarios. It also replaces obsolete and insupportable ground support equipment with new and standardized multi-output equipment compatible with all Army aircraft models; develops rapid battle repair procedures and tools to speed the return of aircraft to combat ready status; and develops new equipment for aerial recovery of damaged aircraft.

Acquisition Strategy: This program is an aggregate of advanced mission support and cargo handling concepts-related projects. While the acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through government testing (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding. Programs are executed in coordination with the user and the gaining organization.

FY 1996 Accomplishments:

- 1356 Completed critical design review of the advanced internal and external cargo handling system. Fabricated the composite floor panels with integral flip-over conveyor rollers, 463L pallet guide rails/restraint system, Night Vision Goggle (NVG) compatible cabin curb lighting, and High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) guide rails. Initiated development and test of winchable cargo hooks.

Total

1356

FY 1997 Planned Program:

- 595 Complete the demonstration of advanced internal and external cargo handling systems.
- 146 Conduct an aircraft cleaning and de-icing system NDI evaluation.
- 403 Complete knowledge based NDI/NDT inspection and repair procedures for composite components.
- 261 Modify and complete turbine engine diagnostic system for T-700 engine as part of an overall integrated portable engine test set program.
- 405 Initiate portable engine test set development for entire aviation fleet that will handle both the aircraft interface as well as the engine itself.
- 151 Initiate development of a contact maintenance electrical power generator capable of supporting the complete range of power and frequency requirements necessary to support aircraft maintenance actions.

Total

2010

Project DB33

Page 6 of 15 Pages

Exhibit R-2 (PE 0603801A)

570

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

PROJECT

DB33

FY 1998 Planned Program:

- 550 Complete portable engine test set development.
- 701 Initiate demonstration of a cargo movement system for heavy (95th percentile) load.
- 285 Develop environmentally friendly mission support equipment.
- 395 Prototype field repair equipment for low observable composite components.
- Total 1931

FY 1999 Planned Program:

- 1003 Virtual prototype heavy-lift capability and evaluate alternatives.
- 403 Initiate smart coupling for aircraft cargo operations.
- 285 Complete low observable (LO) composite repair demonstration.
- 700 Initiate cargo and logistics management and delivery system.
- Total 2391

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
2093	2053	2071	2581
2152	2010		
-796			
1356	2010	1931	2391

Change Summary Explanation: Funding: FY96 (-737) reprogrammed to higher priority requirements.

C. Other Program Funding Summary

RDTE, A Budget Activity 2 PE 0602211 Project A47A Aeronautical & Aircraft Weapons Tech.*

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
15340	19213	24410	27152	27132	28605	29712	30374	Compl	Cost
								Cont	Cont

* Represents total funding in this PE, which only partially supports Project DB33.

Project DB33

Page 7 of 15 Pages

Exhibit R-2 (PE 0603801A)

571

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

PROJECT

DB33

D. Schedule Profile

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Complete the demonstration of advanced internal and external cargo handling systems								
Complete aircraft maintenance unit mobility system								
Virtual prototype heavy cargo lift capability								
Complete heavy cargo lift demonstration								
Complete LO composite repair demonstration								
Initiate smart coupling for aircraft cargo operations								

FY 1996

FY 1997

FY 1998

FY 1999

Project DB33

Page 8 of 15 Pages

Exhibit R-2 (PE 0603801A)

572

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB33

<u>A. Project Cost Breakdown</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Primary Hardware Development	500	770	507	408
Software Development			233	390
Systems Engineering	216	230	320	450
Integrated Logistics Support			75	100
Developmental Test/Operational Test (DT/OT)		300	50	100
Program Management	149	100	160	165
Research Personnel	460	502	534	666
Miscellaneous	31	59	52	112
SBIR/STTR		49		
Total	1356	2010	1931	2391

B. Budget Acquisition History and Planning Information: Not applicable

Project DB33

Page 9 of 15 Pages

Exhibit R-3 (PE 0603801A)

573

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603801A Aviation - Advanced Development

PROJECT

DB45

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB45 Aircrew Integrated Systems	9401	8913	2545	2460	0	0	2801	2817	Continuing	Continuing

A. Mission Description and Justification: Project DB45 - Aircrew Integrated Systems (ACIS) - formerly Aviation Life Support Equipment (ALSE) Advanced Development: This project provides advanced development for those systems and items of equipment that are unique and necessary to the sustainment and enhanced survivability of Army aircrews and passengers on the future integrated battlefield and during related training activities. Advanced development programs will focus on the development and evaluation of emerging technologies and the adaptation of commercial and nondevelopmental items (NDI) to military requirements. The Cockpit Air Bag System (CABS) effort has evaluated a variety of supplemental restraint system approaches to improve crew and passenger crash survivability and thereby reduce potential injuries/casualties on UH-60 and SH-60 aircraft; complementing the AH-64 Cockpit Air Bags System Engineering, Manufacturing, and Development (EMD) program, with follow-on adaptation to the OH-58D and CH-47D aircraft. The CABS project transitioned into the EMD life cycle phase during FY 96. The Air Warrior (AW) program will provide the aircrew with a systems approach to chemical and biological (CB) protection, noise protection, microclimatic conditioning, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision capability, heads-up displays, nuclear flash protection, directed energy eye protection, and flame/heat protection. The AW design will improve overall aircrew mission performance, aircrew comfort, aircrew and aircraft station interface, safety, and survivability. The Aircrew Integrated Common Helmet (AICH) program, an Air Warrior component, is the major information management, control, and aircraft interface for the aviator. The AICH incorporates Comanche electronics as an Aircraft Retained Unit (ARU) utilizing new flat panel displays on the latest, most advanced Pilot Retained Unit (PRU), the HGU-56/P helmet. Improved Noise Reduction and Speech Intelligibility technology is being developed in concert with the AICH program. None of these efforts duplicate any aircraft program efforts. Both joint and service independent efforts will be pursued under the scope of this project.

Acquisition Strategy: DB45 - Two Air Warrior Program Definition and Risk Reduction (PDRR) development contracts will be awarded in FY 97 to separate competing teams. At Milestone II, there will be a down selection of one team for a combined PDRR and EMD phase.

FY 1996 Accomplishments:

- 800 Continued CABS development contractor component, environmental, and dynamic system tests required prior to Milestone II (Joint Service)
- 1624 Continued Air Warrior trade studies, prepared developmental contract Request for Proposal (RFP), and integrated AICH effort (Joint Interest)
- 6427 Continued AICH contractor prototype development for laboratory and Comanche cockpit evaluation of miniature flat panel displays
- 550 Initiated NBC Advanced Development for aircrew and air vehicle in conjunction with the Air Warrior project
- Total 9401

Project DB45

Page 10 of 15 Pages

Exhibit R-2 (PE 0603801A)

574

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

FY 1997 Planned Program:

- 8703 Initiate Air Warrior Program Definition and Risk Reduction contractor effort and continue incorporation of AICH, Improved Noise Reduction and Speech Intelligibility technology, and NBC effort
- 210 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 8913

FY 1998 Planned Program:

- 2545 Continue Air Warrior Program Definition and Risk Reduction (PDRR), and flight test of AICH miniature flat panel displays

Total 2545

FY 1999 Planned Program:

- 2460 Complete Dem Val

Total 2460

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

9636

9907

-506

9401

FY 1997

4104

8913

FY 1998

2733

FY 1999

2654

2460

Change Summary Explanation: Funding: The increase in FY97 (+4809) is due to the Congressional Plus-up for the Aircrew Integrated Common Helmet component of the Air Warrior project.

C. Other Program Funding Summary

RDTE, A Budget Activity 5 PE 0604801A Project
 DC45 (Aircrew Integrated Systems -EMD)
 Aircraft Procurement, Army (APA) SSN AZ3110
 Aircrew Integrated Systems*

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
	4885	5403	5109	6067	2076	2065	2172	2181	Cont	Cont
	7142	13280	12472	10003	8982	8920	23856	36827	Cont	Cont

*Represents the entire APA program for ACIS.

Project DB45

Page 11 of 15 Pages

Exhibit R-2 (PE 0603801A)

575

Item 57

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE						
4 - Demonstration and Validation	0603801A Aviation - Advanced Development DB45						
	FY 1996			FY 1997	FY 1998		
	1	2	3	4	1	2	3
	4	1	2	3	4	1	2
	3	4	1	2	3	4	1
	2	3	4	1	2	3	4
D. Schedule Profile							
Air Warrior							
Prepared Draft Request for Proposal (RFP) and trade studies received	X*						
Release Draft Request for Proposal (RFP) for industry response		X*					
Program Definition & Risk Reduction (PDRR) phase incorporated			X*				
Finish Statement of Work for competition PDRR RFP released to industry				X*			
Source Selection and award contracts				X			
Post Award Conference					X		
Review Functional Analysis						X	
Review of contractor design							X
Source Selection of best team's system						X	
Milestone II decision						X	
Preliminary Design Review							X
Continue Air Warrior combined PDRR and EMD/contractor prototype development							X
AICH							
Initiated advanced development /design of AICH optical display prototypes							
Fabrication of AICH prototypes							
Lab test AICH optics and displays							
AICH Airworthiness testing							
Perform AICH flight test							
Evaluate AICH flight test & enter EMD							
NBC							
Initiated NBC Initiatives development for air vehicle and aircrew							

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

D. Schedule Profile

	FY 1996			FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1	2	3	4
Integrated NBC Advanced Initiatives with Air Warrior PDRR				X*								
Cockpit Air Bags System (CABS)												
UH-60 CABS instrumented flight test	X*											
UH-60 CABS Underwater test		X*										
Transition to EMD phase, UH-60 CABS			X*									
UH-60 CABS EMD contract award				X*								

* Denotes completed effort

Project DB45

Page 13 of 15 Pages

Exhibit R-2 (PE 0603801A)

577

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
4 - Demonstration and Validation											
PE NUMBER AND TITLE											
0603801A Aviation - Advanced Development											DB45
A. Project Cost Breakdown											
Development Organizations	FY 1996	FY 1997	FY 1998	FY 1999							
	7161	7034	1865	1800							
Support and Management Organizations	1725	1169	600	580							
Test and Evaluation Organizations	515	500	80	80							
SBIR/STTR		210									
Total	9401	8913	2545	2460							
B. Budget Acquisition History and Planning Information											
Performing Organizations											
Contractor or											
Government	Method/Type	Award or	Performing								
Performing	or Funding	Obligation	Activity								
Activity	Vehicle	Date	EAC	Project	Office	Total					
				EAC		Prior to					
						FY 1996					
Product Development Organizations											
CABS, Simula,	SS-CPFF	May 1994	3183	3183		2629	554	0	0	0	3183
Phoenix, AZ											
Air Warrior AICH,	SS-CPFF	Jul 1995				3134	6427	5614	100	100	Cont
Gentex,											
Carbondale, PA											
Air Warrior,	C-CPFF	Jun 1995	1208	1208		1123	30	20	5	5	1208
various simulation											
facilities											
Air Warrior, AD	C-CPFF	Mar 1997				0	0	1100	1700	1695	Cont
unknown											
Air Warrior,	MIPR	Jan 1997	360	360		0	0	300	60	0	360
HRED, Aberdeen											
Proving Grnd, MD											
Miscellaneous	MIPR		866	866		716	150	0	0	0	866
SBIR/STTR								210			210
Support and Management Organizations											
CAS, Huntsville,	C-T&M	Dec 1993				656	330	200	140	130	Cont
AL											

Project DB45

Page 14 of 15 Pages

Exhibit R-3 (PE 0603801A)

578

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program Cont
Camber, Huntsville, AL	C-T&M	Dec 1993			737	331	200	140	130		Cont
ATCOM, St. Louis, MO/AMCOM, Huntsville, AL	MIPR				1411	500	499	300	300		Cont
AFDD, Moffett Field, CA	MIPR	Nov 1993			1588	0	0	5	5		Cont
USAAARL, Ft. Rucker, AL	MIPR	May 1995			780	224	100	5	5		Cont
AATD, Ft. Eustis, VA	MIPR				640	240	100	5	5		Cont
Natick R&D Center, Natick, MA	MIPR				445	100	70	5	5		Cont
Test and Evaluation Organizations											
TECOM/ATTC, Ft. Rucker, AL	MIPR				278	515	500	80	80		Cont
Government Furnished Property: Not Applicable											
Subtotal Product Development Organizations					13859	8886	8413	2465	2380		Cont
Subtotal Support and Management Organizations					278	515	500	80	80		Cont
Subtotal Test and Evaluation Organizations					14137	9401	8913	2545	2460		Cont
Total											

Project DB45

Page 15 of 15 Pages

Exhibit R-3 (PE 0603801A)

579

Item 57

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603802A Weapons and Munitions - Advanced Development

PROJECT

DAS2

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DAS2 Small Arms Improvements	949	0	0	0	1812	2919	1498	1099	0	8277

A. Mission Description and Budget Item Justification: This project aims to achieve improvements in target acquisition, target effect, lethality, training effectiveness, durability, and reliability, availability and maintainability (RAM) for small arms weapons systems. Current small arms systems include a variety of personal defense weapons (.38 cal, .45 cal; 9mm), individual weapons (5.56mm - 7.62mm), and crew served weapons (5.56mm - 40mm). Also included is related equipment such as fire control, training devices, and ammunition. This project will begin development of a small arms fire control system (SAFCS) providing an integrated day/night fire control system with a laser range finder for use on the MK19-3 Grenade Machine Gun. The SAFCS is a continuation of an advanced development effort conducted by the Joint Service Small Arms Program. This project focuses on efforts associated with advanced technology development. It demonstrates general military utility, to include demonstration and validation, of a SAFCS and is correctly placed in budget activity 4.

Acquisition Strategy: Not Applicable

FY 1996 Accomplishments:

- 75 Conducted market survey/Trade-off Determination
- 248 Developed system performance specification
- 75 Prepared and staff Purchase Description
- 75 Prepared procurement package input for test hardware
- 350 Awarded contract for test hardware
- 126 Conducted test and develop reports
- Total 949

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project DAS2

Page 1 of 3 Pages

Exhibit R-2 (PE 0603802A)

580

Item 58

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603802A Weapons and Munitions - Advanced

DAS2

Development

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 President's Budget Request

FY 1996

949

949

0

949

FY 1997

0

0

0

0

FY 1998

0

0

0

0

FY 1999

0

0

0

0

C. Other Program Funding Summary NoneD. Schedule ProfileFY 1996
2 3FY 1997
2 3FY 1998
2 3FY 1999
2 3Conduct market survey /Trade-off
Determination

Develop system performance specification

Prepare and staff Purchase Description

Prepare procurement package input for

test hardware

Award Contract for test hardware

Conduct test and develop reports

X

X

X

Project DAS2

Page 2 of 3 Pages

Exhibit R-2 (PE 0603802A)

581

Item 58

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603802A Weapons and Munitions - Advanced Development

PROJECT

DAS2

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Other Government Agency Support	520			
Program Management Support	79			
Contract Support	350			
Total	949			

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARDEC	MIPR	Multi	370	370	0	370	0	0	0	5238	5608
Support and Management Organizations											
PM Small Arms	Allot	Multi	79	79	0	79	0	0	0	540	619
TACOM	DC	2Q97	350	350	0	350	0	0	0	0	350
Picatinny Arsenal											
Test and Evaluation Organizations											
TECOM	MIPR	Multi	35	35	0	35	0	0	0	0	35
TEXCOM	MIPR	Multi	40	40	0	40	0	0	0	0	40
ARDEC	MIPR	Multi	75	75	0	75	0	0	0	1550	1625
Government Furnished Property None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											

Project DAS2

Page 3 of 3 Pages

Exhibit R-3 (PE 0603802A)

582

Item 58

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation
0603804A Logistics and Engineering Equipment -
Advanced Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5587	7433	6783	6833	7731	6535	13693	13317	Continuing	Continuing
DGO1 Combat Engineer Equipment Advanced Development	0	0	0	0	0	0	944	1415	Continuing	Continuing
DG10 Advanced Tactical Power Sources	128	129	135	178	198	216	477	475	Continuing	Continuing
DG11 Advanced Electrical Energy Concepts Advanced Development	216	213	214	1371	1020	743	616	570	Continuing	Continuing
DG14 Logistics Support Equipment Advanced Development	92	86	96	98	105	101	103	100	Continuing	Continuing
DK39 General Support Equipment Advanced Development	707	851	1689	1809	1980	2103	2424	2431	Continuing	Continuing
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	864	872	859	824	899	892	944	946	Continuing	Continuing
D266 Airdrop Equipment Advanced Development	1116	1414	1359	1353	1336	1503	4864	4700	Continuing	Continuing
D428 Rigid Wall Shelter Advanced Development	2464	3868	2431	870	983	977	1970	1977	Continuing	Continuing
D526 Marine Orientation Log Equipment Advanced Development	0	0	0	330	1210	0	1351	703	Continuing	Continuing

Mission Description and Budget Item Justification: This program supports advanced development of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in airdrop, rigid wall shelters, marine craft, bridging, electric power generators and batteries, potable water, environmental control and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield of the first to fight; and to provide for greater sustainment of all combat forces while reducing the logistics support burden. The projects in this Program Element focus on efforts to demonstrate general military utility, to include demonstration and validation and are therefore correctly placed in Budget Activity 4.

Exhibit R-2 (PE 0603804A)

Page 1 of 30 Pages

583

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DG10

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG10 Advanced Tactical Power Sources	128	129	135	178	198	216	477	475	Continuing	Continuing

A. Mission Description and Justification This program develops advanced tactical power sources to improve soldier mobility, sustainability, and survivability. This is the only project that bridges the gap between science and technology and full scale production of new higher energy density, lower cost, all-weather batteries/energy conversion systems to satisfy the unique tactical and logistical requirements of portable electronic battlefield equipment. This effort also includes state-of-charge measuring and indicating circuitry as well as safety protection circuitry. Superior battery charging and analyzing equipment required to meet unique requirements are also included.

Acquisition Strategy: Transition to production

FY 1996 Accomplishments:

- 40 Developed an improved rechargeable battery and charger based on the lithium ion battery chemistry for use in the Single Channel Ground and Airborne Radio System (SINCGARS).
- 40 Developed techniques for reducing battery related disposal costs.
- 48 Developed a vehicular mounted battery charging station.
- Total 128

FY 1997 Planned Program:

- 20 Conduct field test and evaluation of next generation of primary lithium based batteries.
- 64 Begin development of high power battery chemistry with no toxic/hazardous materials.
- 45 Develop High Energy/High Power throw away battery for Force XXI Soldier.
- Total 129

FY 1998 Planned Program:

- 108 Develop cost effective, environmentally friendly, ultra thin rechargeable lithium battery for Force XXI Soldier.
- 27 Test, evaluate proof of principle for thin cells and prototype batteries.
- Total 135

Project DG10

Page 2 of 30 Pages

Exhibit R-2 (PE 0603804A)

584

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -

DG10

Advanced Development

FY 1999 Planned Program:

- 139 Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.
 - 39 Conduct field tests and prepare specifications for thin, conformal rechargeable batteries family.
- Total 178

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	130	132	130	172
Appropriated Value	135	129		
Adjustments to Appropriated Value	-7			
FY 1998 Pres Bud Request	128	129	135	178

C. Other Program Funding Summary: None

D. Schedule Profile

	1	2	3	4	1	2	3	4	1	2	3	4
Develop Rechargeable Battery & Recharger for SINGARS												
Investigate reduction of battery related disposal costs				X*								
Develop charging station for vehicular batteries												
Field test and evaluation of next generation lithium batteries												
Develop High Energy/High Power battery for Force XXI Soldier												
Develop thin rechargeable lithium battery												
Test and evaluate Proof of Principle/prototype of thin cell batteries												
Develop conformal battery												
Conduct field tests on thin, conformal batteries												

* Milestones Complete

Project DG10

Page 3 of 30 Pages

Exhibit R-2 (PE 0603804A)

585

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Demonstration and Validation	0603804A Logistics and Engineering Equipment - Advanced Development	DG10	
A. Project Cost Breakdown			
Hardware Development	FY 1996	FY 1997	FY 1998
Test and Evaluation	128	99	115
Total	128	30	20
		129	135
			148
			30
			178
B. Budget Acquisition History and Planning Information: None			

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

PROJECT

DG11

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG11 Advanced Electrical Energy Concepts Advanced Development	216	213	214	1371	1020	743	616	570	Continuing	Continuing

A. Mission Description and Justification: Provides advanced development for electrical energy devices to improve soldier mobility, readiness and survivability. This project supports initiatives which will lead to tactical electric power procurements in diesel powered generators and power units/power plants rated at 3-200 kilowatts (kW) with higher efficiency, lighter weight, easier maintainability and higher reliability.

Acquisition Strategy: Complete advanced development and transition to engineering development.

FY 1996 Accomplishments:

- 126 Completed evaluation of commercial digital displays, controls and diagnostics in 60kW engine generators.
- 90 Initiated evaluation of permanent magnet generators with associated electronics.
- Total 216

FY 1997 Planned Program:

- 209 Evaluate digital display controls and diagnostics over the family of generator sets.
- 4 Small Business Innovation Research/Small Business Technology transfer (SBIR/STTR) Program
- Total 213

FY 1998 Planned Program:

- 214 Initiate evaluation of lightweight efficient engine design for 5kW, 10kW, and 15kW generator sets.
- Total 214

FY 1999 Planned Program:

- 706 Complete evaluation of lightweight efficient engine designs for 5kW, 10kW, and 15kW generator sets.
- 665 Complete evaluation of permanent magnet generators and associated electronics.
- Total 1371

Project DG11

Page 5 of 30 Pages

Exhibit R-2 (PE 0603804A)

587

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

PROJECT

0603804A Logistics and Engineering Equipment -
Advanced Development

DG11

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	99	90	44	962
Test and Evaluation	50	73	125	59
Government Engineering and Support	42	21	25	200
Government Program Support	25	25	20	100
SBIR/STTR		4		50
Total	216	213	214	1371

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations	CPFF/TBD	2Q96	200	200	216	209	214	1159	1798	4	
SBIR/STTR											
Support and Management Organizations: None											
Test and Evaluation Organizations	In-House	Various									
CECOM											
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											

Project DG11

Page 7 of 30 Pages

Exhibit R-3 (PE 0603804A)

589

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development								DG14		
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DG14	Logistics Support Equipment Advanced Development	92	86	96	98	105	101	103	100	Continuing	Continuing	
<p>A. Mission Description and Justification: This program supports advanced development of new and improved technologies for logistics support equipment such as materiel handling equipment (MHE).</p> <p>Acquisition Strategy: Develop engineering prototype and award competitive contract for production or select non-developmental item (NDI) equipment based on market investigation and requests for proposals (RFPs) from industry.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 38 Initiated contract package for Visibility Improvements for Forklift Carriages (VIC). • 54 Initiated VIC test. Total 92 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 42 Conduct technical testing of VIC prototypes. • 42 Initiate materiel change management documentation for VIC. • 2 Small Business Innovation Research/Small Business Technology transfer (SBIR/STTR) Program Total 86 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 41 Conduct market survey for Lightweight Container Handlers. • 55 Complete materiel change management documentation for VIC. Total 96 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 98 Initiate preparation of acquisition package for Light Weight Container Handlers. Total 98 												
Project DG14		Page 8 of 30 Pages								Exhibit R-2 (PE 0603804A)		

590

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development DG14

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	95	88	88	87
Appropriated Value	97	86		
Adjustments to Appropriated Value	-5			
FY 1998 Pres Bud Request	92	86	96	98

Change Summary Explanation: Funding increase (+8 in FY 1998 and +11 in FY 1999) reprogrammed into this project for acceleration of the Lightweight Container Handlers effort.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
RDTE, 0604804.DH14, Logistics Support Equipment	579	88	4829	100	105	102	103	101	Cont	Cont
OPA 3, M41200, Truck Fork Lift, DE, PT, RT	10587			24396	35774	50181	16863	16894	Cont	Cont
OPA 3, MA8600, Items Less Than \$2.0M (MHE)	2754	2664	1724	1715	1854	1843	1984	1988	Cont	Cont
OPA 3, M41800, All Terrain Lifting Articulated System	13640	15941	3554	10498	10505	10510	11903	23851	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	1	2	3	4	4	1	2
Conduct CCR Milestone II	X*								
Contract for Visibility Improvements for Forklift Carriages (VIC)									
Complete testing of VIC prototypes				X					
Initiate materiel change management documentation for VIC					X				
Complete materiel change management documentation for VIC									
Initiate acquisition package for Light Weight Container Handlers								X	

* Milestones Completed

Project DG14

Page 9 of 30 Pages

Exhibit R-2 (PE 0603804A)

591

Item 59

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

DG14

**0603804A Logistics and Engineering Equipment -
Advanced Development**

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
54	44	55	58
38	40	41	40
92	2 86	96	98

Performing Organizations

Project Office <u>EAC</u>	Total Prior to <u>FY 1996</u>	913 259
---------------------------------	-------------------------------------	------------

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DK39

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK39 General Support Equipment Advanced Development	707	851	1689	1809	1980	2103	2424	2431	Continuing	Continuing

A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy water purification, maintenance and environmental control requirements.

Acquisition Strategy: Transition to development of engineering prototypes or select Non-Developmental Item based on market survey and proposals from industry.

FY 1996 Accomplishments:

- 171 Investigated commercial technology applicable to 9K British Thermal Units-Heat (BTUH) Environmental Control Unit (ECU).
- 150 Conducted Milestone I/II IPR for the Lightweight Water Purifier (LWP).
- 161 Prepared contract package for design/fabrication of prototype LWP.
- 225 Completed evaluation of commercially available LWP.
- Total 707

FY 1997 Planned Program:

- 164 Select components and initial ECU system design.
- 450 Design and fabricate prototype LWP.
- 126 Initiate Pre-Production Qualification Testing (PPQT) and Initial Operational Test and Evaluation (IOTE) of LWP.
- 90 Complete market survey of commercial packaged water units and conduct Milestone I/II IPR for PWS.
- 21 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 851

FY 1998 Planned Program:

- 491 Investigate commercial technology applicable to 9K BTUH ECU and large diesel heaters (250K + BTUH).
- 300 Complete PQT and IOTE of LWP.
- 220 Conduct Milestone III IPR and type classify (generic) for the LWP.
- 628 Design and build EMD prototype PWS.
- 50 Initiate preparation of LWP production contract.
- Total 1689

Project DK39

Page 11 of 30 Pages

Exhibit R-2 (PE 0603804A)

593

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development		February 1997	DK39
D. Schedule Profile		FY 1997	FY 1998	FY 1999	
Prepare contract package for design/fabrication of LWP	X*				
Complete evaluation of commercially available LWP	X*				
Design/fabrication of LWP		X			
Initiate PPQT and IOTE for LWP		X			
Complete market survey and conduct MS I/II IPR for Packaged Water Systems		X			
Investigate 9K ECU and large heater technology			X		
Develop 9K ECU prototypes				X	
Investigate small diesel heater technology			X		
Complete PQT/IOTE for LWP			X		
Design and fabricate prototype PWS			X		
Initiate preparation of LWP production contract		X			
Conduct MS III (Generic) IPR for LWP			X		
Conduct PQT/IOTE on PWS prototype				X	
Conduct EDT of WIPS prototype				X	
Initiate preparation of WIPS program documentation			X		
Initiate preparation of PWS program documentation to support MS III IPR				X	
* Milestones Complete					

Project DK39

Page 13 of 30 Pages

Exhibit R-2 (PE 0603804A)

595

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -

PROJECT

DK39

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM	MIPR	Various						130			130
SBIR/STTR							21			Cont	21
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
								1689	1809		5891
								1689	1809		5891

Government Furnished Property: None

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

Project DK39

Page 15 of 30 Pages

Exhibit R-3 (PE 0603804A)

597

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development								DK41	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK41	Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	864	872	859	824	899	892	944	946	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy petroleum distribution requirements.</p> <p>Acquisition Strategy: Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 282 Conducted system analysis of petroleum quality analysis set (PQAS) function and configuration. 503 Completed system design and initiated fabrication of PQAS technology demonstration model. 79 Completed performance Technical Data Package (TDP) for Standard Army Refueling System (SARS) and conduct demonstrations. <p>Total 864</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 50 Update PQAS program management documentation for Milestone II IPR. 62 Prepare solicitation package for PQAS EMD Phase. 740 Complete fabrication and development testing PQAS technology demonstration model (TDM). 20 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program <p>Total 872</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 35 Coordinate PQAS program management documentation and conduct Milestone II IPR. 170 Demonstrate feasibility of portable PQAS modules for use in forward areas. 95 Prepare Petroleum Quality Surveillance Laboratory (PQSL) program management documentation and conduct Milestone I IPR. 424 Award contract for ultralight 350 gallons per minute (GPM) pump assembly prototype. 135 Prepare contract package for PQSL technology demonstration model. <p>Total 859</p>											

Project DK41

Page 16 of 30 Pages

Exhibit R-2 (PE 0603804A)

598

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development DK41

FY 1999 Planned Program:

- 80 Continue development of ultralight 350 GPM pump assembly prototype.
- 744 Award PQSL contract for design, fabrication, and test.

Total 824

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999	Total
FY 1997 President's Budget	885	891	912	876	
Appropriated Value	910	872			
Adjustments to Appropriated Value	-46				
FY 1998 Pres Bud Request	864	872	859	824	

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
RDTE, 0604804.DL41, Fuels and Equipment Engineering Development	1135	1011	1071	1081	1057	1052	1306	1314	Compl	Cost
OPA3, ML5330, Items Less Than \$2 million (POL)	4554	6442	6275	5914	6991	6833	7981	7886	Cont	Cont
OPA3, M90800, Hose/line Outfit Fuel Handling	0	0	0	814	2672	2672	2091	1745	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999	FY 1999
1	2	3	4	1	2	3	4	1	2	3
Conduct system analysis of PQAS	X*									
Complete SARS performance TDP and conduct demonstrations										
Initiate fabrication of PQAS tech demo model			X*							
Prepare solicitation package for PQAS EMD Phase										
Complete fabrication and testing of PQAS technology demonstration model										
Update PQAS Program Management Documents (PMD) for Milestone II IPR										

Project DK41

Page 17 of 30 Pages

Exhibit R-2 (PE 0603804A)

599

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT			
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development		February 1997		DK41			
D. Schedule Profile		FY 1996		FY 1997		FY 1998		FY 1999	
		1	2	3	4	1	2	3	4
Conduct PQAS Milestone II IPR and coordinate									
PMD									
Demonstrate feasibility of portable PQAS modules for use in forward areas									
Prepare PMD for PQSL and conduct Milestone I IPR									
Award contract for ultralight 350 GPM pump assembly model									
Prepare contract package for PQSL TDM									
Continue development of ultralight 350 GPM pump									
Award contract for design fabrication and test of PQSL TDM									
*Milestone Completed									

Project DK41

Page 18 of 30 Pages

Exhibit R-2 (PE 0603804A)

600

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -

DK41

Advanced Development

	FY 1996	FY 1997	FY 1998	FY 1999		FY 1996	FY 1997	FY 1998	FY 1999		FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
A. Project Cost Breakdown																
Hardware Development	669	667	470	511												
Test and Evaluation	50	50	63	87												
Government Engineering and Support	95	85	276	176												
Government Program Support	50	50	50	50												
SBIR/STTR	0	20	0	0												
Total	864	872	859	824												
B. Budget Acquisition History and Planning Information																
Performing Organizations																
Contractor or Government																
Performing Activity																
Method/Type or Funding Vehicle																
Award or Obligation Date																
Performing Activity EAC																
Project Office EAC																
Total Prior to FY 1996																
Product Development Organizations: TARDEC																
Support and Management Organizations: ARL, ATCOM, TACOM																
Test and Evaluation Organizations: TECOM, TEXCOM																
Miscellaneous:																
TARDEC																
ETG																
TECOM																
TEXCOM																
ARL																
ATCOM																
TACOM																
Contractor																
Contractor																
SBIR/STTR																
Government Furnished Property: None																

Project DK41

Page 19 of 30 Pages

Exhibit R-3 (PE 0603804A)

601

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE					
4 - Demonstration and Validation	0603804A Logistics and Engineering Equipment - Advanced Development			DK41		
	Total					
	Prior to				Budget to	Total
	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Complete
Subtotal Product Development						Program
Subtotal Support and Management	1447	864	872	859	824	4866
Subtotal Test and Evaluation	1447	864	872	859	824	4866
Total Project						

Project DK41

Page 20 of 30 Pages

Exhibit R-3 (PE 0603804A)

602

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

PROJECT

D266

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D266 Airdrop Equipment Advanced Development	1116	1414	1359	1353	1336	1503	4864	4700	Continuing	Continuing

A. Mission Description and Justification: Conduct accelerated demonstration and validation of airdrop systems and equipment to provide advanced offset personnel and cargo airdrop capabilities over a range of altitudes with emphasis on improved safety and greater precision, balanced with reduced vulnerability of personnel, aircraft, aircrew and equipment.

Acquisition Strategy: Single cycle accelerated development with type classification directly upon successful conclusion of Demonstration/Validation development.

FY 1996 Accomplishments:

- 1116 Conduct technical testing of the Enhanced Container Delivery System (ECDS).
- Total 1116

FY 1997 Planned Program:

- 680 Initiate EPID effort; component development, initial developmental testing.
- 300 Award contract for the design and trade off analysis of Advance Tactical Parachute System (ATPS) candidates. Number 1 priority of the XVIII ABN Corps. Increases safety and lethality of Force XXI Airborne Forces.
- 399 Conduct user testing for ECDS
- 35 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 1414

FY 1998 Planned Program:

- 1359 Monitor contract development efforts and conduct component level test and evaluation of ATPS.
- Total 1359

FY 1999 Planned Program:

- 1300 Conduct developmental testing of ATPS; initiate operational testing.
- 53 Conduct market survey for 500 feet Low Velocity Aerial Delivery System (LVADS) Heavy
- Total 1353

Project D266

Page 21 of 30 Pages

Exhibit R-2 (PE 0603804A)

603

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -

Advanced Development

PROJECT

D266

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1452	1444	1452	1452
Appropriated Value	1493	1414		
Adjustments to Appropriated Value	-377			
FY 1998 Pres Bud Request	1116	1414	1359	1353

Change Summary Explanation: Funding reprogrammed (-336) to a higher priority in FY 1996.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0604804.D279 Airdrop Equipment Engineering Development	1116	1414	1359	1354	1380	1371	4864	4701		5270
OPA 3, R10903, Enhanced Container Delivery System					5270					5270
OPA 3, R10904, Advanced Tactical Parachute System						14924				14924

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont
1	2	3	4	1	4	2	4	1	
Conclude technical testing of ECDS									
Initiate EPJD effort									
Award contract for ATPS									
Conduct user test for ECDS									
Design, fabricate and conduct component testing of ATPS									
Conduct developmental testing of ATPS									
Begin operational testing of ATPS									

Project D266

Page 22 of 30 Pages

Exhibit R-2 (PE 0603804A)

604

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
4 - Demonstration and Validation											
PE NUMBER AND TITLE											
0603804A Logistics and Engineering Equipment - Advanced Development											
A. Project Cost Breakdown											
Primary Hardware Development	FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	Budget to Complete	Total Program			
Test and Evaluation	574	969	934	930	356	67		25432	Cont	25432	
Government Support and Management	467	335	350	356	356	67		1724	Cont	1724	
SBIR/STTR	75	75	75	35				935	Cont	935	
Total	1116	1414	1359	1353				3138	Cont	3138	
B. Budget Acquisition History and Planning Information											
Performing Organizations											
Contractor or Government	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program			
Method/Type or Funding Vehicle	EAC	FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	Cont	25432	25432	
Award or Obligation Date	EAC	FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	Cont	1724	1724	
Performing Activity	EAC	FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	Cont	935	935	
Product Development Organizations											
SSCOM	23711	594	561	285	281	285	281	Cont	25432	25432	
QMSCH/OGA	18	0	408	649	649	649	649	Cont	1724	1724	
Support and Management Organizations											
SSCOM	643	75	75	75	67	75	67	Cont	935	935	
Test and Evaluation Organizations											
TECOM/OGA	1916	322	300	300	300	300	300	Cont	3138	3138	
SSCOM	120	125	35	56	56	56	56	Cont	386	386	
SBIR/STTR		35	35	35	35	35	35	Cont	35	35	
Government Furnished Property: None											
Subtotal Product Development	23729	594	969	934	930	934	930		27156	27156	
Subtotal Support and Management	643	75	75	75	67	75	67		935	935	
Subtotal Test and Evaluation	2036	447	370	350	356	350	356		3559	3559	
Total Project	26408	1116	1414	1359	1353	1359	1353		31650	31650	
Project D266										Exhibit R-3 (PE 0603804A)	
Page 23 of 30 Pages											

605

Item 59

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development								D428	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D428	Rigid Wall Shelter Advanced Development	2464	3868	2431	870	983	977	1970	1977	Continuing	Continuing
<p>A. Mission Description and Justification: Develop a family of tactical rigid wall shelters which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.</p> <p>Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and then to production.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 788 Completed development of Cargo Bed Cover (CBC) variants for High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), completed testing of M105 CBC, and redesign 2 1/2 ton truck CBC. 1676 Completed technical testing of Large Standard Integrated Command Post System (SICPS) Shelter, and began fabrication of Operational Test (OT) shelters. <p>Total 2464</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 856 Complete development of M105 CBC and award design/fabrication contract for fourth CBC variant based user survey. Complete retesting and development of 2 1/2 ton truck CBC. 1405 Begin effort to apply novel signature management techniques to the HMMWV-mounted SICPS shelter to avoid visual, thermal, radar and IR detection 1513 Begin effort to develop a survivable SICPS shelter that provides ballistic protection, protection from directed energy and fuel air weapons, and enhanced NBC protection. 94 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program <p>Total 3868</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1548 Award contract for the design and fabrication of the Survivable SICPS Shelter. 545 Complete design, fabrication, and testing of the fourth variant CBC. 338 Award development contract for a Family of Rigid/Soft (R/S) Hybrid Shelter. <p>Total 2431</p>											

Project D428

Page 24 of 30 Pages

Exhibit R-2 (PE 0603804A)

606

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development D428

FY 1999 Planned Program:

- 210 Complete development of the fourth CBC variant.
- 660 Complete design and conduct fabrication of R/S Hybrid Shelters.

Total 870

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3482	3951	2594	926
Appropriation Value	3580	3868		
Adjustments to Appropriated Value	-1116			
FY 1998 Pres Bud Request	2464	3868	2431	870

Change Summary Explanation: In FY 1996 (-1018) funding was reprogrammed to higher priority requirements.

C. Other Program Funding Summary

RDTE, 0604804.D429, Rigid Wall Shelter
Engineering Development

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
	2296	3193	1498	1024	1159	1152	2157	2166	Cont	

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
Complete testing and redesign of M105 Trailer CBC	1	2	1	3	4	2	4	1	3	4
Complete development of HMMWV CBC										
Complete technical testing of the Large SICPS Shelter										
Complete development of 2 1/2 ton truck CBC										
Begin development of reduced Signature SICPS Shelter										
Design and test Survivable Command Post Test fourth variant CBC										
Award contract for Hybrid Shelters										

Project D428

Page 25 of 30 Pages

Exhibit R-2 (PE 0603804A)

607

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)											DATE	February 1997	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE											PROJECT	
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development												
D. Schedule Profile		FY 1996				FY 1997				FY 1998			FY 1999	
		1	2	3	4	1	2	3	4	1	2	3	4	
Complete development of fourth Variant CBC														
Fabricate R/S Hybrid Shelter														
Type Classify M105 Trailer CBC							X							
Type Classify HMMWV CBC									X					
*Milestone completed														

Project D428

Page 26 of 30 Pages

Exhibit R-2 (PE 0603804A)

608

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

D428

A. Project Cost Breakdown
 Primary Hardware Development 1806
 Test and Evaluation 474
 Program Management Support 184
 SBIR/STTR 94
 Total 2464

FY 1996 FY 1997 FY 1998 FY 1999
 1806 3166 421 270
 474 305 1000 200
 184 303 1010 400
 94
 2464 3868 2431 870

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contract

Government Method/Type Award or Performing
 Performing or Funding Obligation Activity
 Activity Vehicle Date EAC

Project Total
 Office Prior to
 EAC FY 1996

Budget to
 Complete
 FY 1999 FY 1998
 Cont 15475
 Cont 3619

Product Development Organizations

SSCOM In-House
 Plastics Research Various
 Corp.

14299 125 360 421
 382 1031 2206

Cont 15475
 Cont 3619

Brunswick

Ft. Belvoir

CASCOM

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

TECOM

SBIR/STTR

3605 184 303 1010
 7508 474 305 1000
 94

Cont 5502
 Cont 9487
 94

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

14697 1806 3166 421
 3605 184 303 1010
 7508 474 399 1000
 25810 2464 3868 2431

270 20360
 400 5502
 200 9581
 870 35443

Project D428

Page 27 of 30 Pages

Exhibit R-3 (PE 0603804A)

609

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

D526

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D526 Marine Orientation Log Equipment Advanced Development	0	0	0	330	1210	0	1351	703	Continuing	Continuing

A. Mission Description and Justification: This project provides advanced development of technology necessary to improve marine logistical equipment. The effort for the concept design for the Landing Craft Utility (LCU) 1600 Service Life Extension Program (SLEP) will focus upon providing enhanced capabilities and reduction of Operating and Support (O&S) costs over the next several decades as well as meet Safety of Life at Sea (SOLAS) requirements.

Acquisition Strategy: RDTE followed by competitive procurement.

FY 1996 Planned Program: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 125 Concept design effort to enhance performance of LCU 1600.
- 135 Concept design effort to reduce O&S costs of LCU 1600.
- 70 Concept design effort to satisfy new SOLAS standards.
- Total 330

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustment to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
0	0	0	338
0	0	0	330

C. Other Program Funding Summary: None

Project D526

Page 28 of 30 Pages

Exhibit R-2 (PE 0603804A)

610

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

PROJECT

D526

D. Schedule Profile

FY 1996

2 3 4

FY 1997

2 3 4

FY 1998

2 3 4

FY 1999

2 3 4

X*

Report/Concept Acceptance
LCU 1600 Contract Award (Task Order)
In-process Review

X

X

*Milestone completed

Project D526

Page 29 of 30 Pages

Exhibit R-2 (PE 0603804A)

611

Item 59

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development		D526		
		FY 1996	FY 1997	FY 1998	FY 1999	
A. Project Cost Breakdown						
Contractor Engineering Support					304	
Program Management Support					26	
Total					330	
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type	Award or	Performing			
Performing	or Funding	Obligation	Activity			
Activity	Vehicle	Date	EAC			
Product Development Organizations						
Miscellaneous	SS-FP					
Support and Management Organizations						
NSWC	MIPR					
ATCOM	MIPR					
Test and Evaluation Organizations: None						
Government Furnished Property: None						
Subtotal Product Development					279	726
Subtotal Support and Management					51	438
Subtotal Test and Evaluation						
Total Project					330	1164
		Total	Prior to			
		FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
		EAC	EAC			Complete
						Program
		447	447	279	Cont	726
		318	318	29	Cont	347
		69	69	22	Cont	91
		447	447	279		726
		387	387	51		438
		834	834	330		1164

Project D526

Page 30 of 30 Pages

Exhibit R-3 (PE 0603804A)

Project D526

Page 30 of 30 Pages

Exhibit R-3 (PE 0603804A)

612

Item 59

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603805A Combat Service Support Control Systems Evaluation and Analysis

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13228	12689	7673	7783	1860	1863	1877	1885	Continuing	Continuing
D091 Combat Service Support Control System	11764	10771	5914	5997	0	0	0	0	0	136361
D246 Tactical Communications System-Advanced Development	1464	1918	1759	1786	1860	1863	1877	1885	Continuing	Continuing

Mission Description and Budget Item Justification: Project D091, The Combat Service Support Control System, is a computer software system designed to assist the Combat Service Support (CSS) Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS battlefield functional area (BFA) node of the Army Tactical Command and Control System (ATCCS) which is a component of the Army Battle Command System (ABCS). Project D246, Tactical Communications System - Advanced Development, provides for insertion of proven communications technology from program element 0602782A, Project AH92 exploratory development into advanced development. Examples of these potential programs are the Multiband, Multimode Radio, high power solid state amplifiers and couplers, and packet appliques used to increase network efficiency. These efforts provide for the demonstration and validation of advanced technologies and therefore are appropriately funded in Budget Activity 4.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603805A Combat Service Support Control
Systems Evaluation and Analysis

PROJECT

D091

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D091 Combat Service Support Control System	11764	10771	5914	5997	0	0	0	0	0	136361

A. Mission Description and Justification: Project D091, Combat Service Support Control System. The CSSCS is a computer software system designed to assist the CSS Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS BFA node of the ATCCS, which is a component of the ABCS.

Acquisition Strategy: Acquisition strategy is to pursue an evolutionary development process, with program development structured to evolve over five versions. Versions 1 and 2 served as proof of principle, and provided initial division level CSS functional capability on common hardware. Version 3 builds on the capabilities of the previous versions and provides an Initial Operational Capabilities at Division and Corps level, to include initial horizontal interoperability with ABCS systems. Version 4 will extend CSSCS to EAC, as well as provide added capabilities at Echelons Corps and Below (ECB). Version 5, the objective CSSCS software, will provide remaining ECB functionality, and extend CSSCS capabilities to joint, allied and coalition forces. FY 97 is a transition year, with the Version 3 TRW contract in an extension period through 30 Sep 97. TRW will provide software maintenance and update support to CSSCS through IOTE-II, Task Force XXI and Division XXI preparation activities. Lockheed Martin Corporation (LMC) will provide training support in FY 97, and will transition to Version 4 and Version 5 software development beginning in FY 98.

FY 1996 Accomplishments:

- 5715 Continued Version 3 software development
- 1194 Began Version 4 software development
- 2000 Continued LRIP activity in accordance with Acquisition Decision Memo at III Corps
- 1055 Prepared for and conduct Army Warfighter Experiment (AWE) and Task Force XXI activities.
- 800 Prepared and conduct Version 4 Preliminary Design Review (PDR) and Critical Design Review (CDR)
- 1000 Prepared for and begin IOTE-II
- Total 11764

FY 1997 Planned Program:

- 5007 Complete Version 3 software development
- 537 Continue Version 4 software development
- 694 Begin Version 5 development
- 1000 Conclude IOTE-II

Project D091

Page 2 of 9 Pages

Exhibit R-2 (PE 0603805A)

614

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603805A Combat Service Support Control

D091

Systems Evaluation and Analysis

FY 1997 Planned Program: (continued)

• 1200 Prepare for and conduct Army Warfighter Experiment (AWE), Task Force XXI and Division XX activities

• 800 Prepare documentation and conduct ASARC III (Full Scale Production (FSP)) and C3I Committee Review

• 533 Begin fielding of Version 3

• 750 Begin Version 4 Limited User Test (LUT)

• 250 Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)

Total 10771

FY 1998 Planned Program:

• 2897 Complete Version 4 development

• 2367 Continue Version 5 development

• 450 Conclude LUT

• 200 Begin FOT&E

Total 5914

FY 1999 Planned Program:

• 5897 Complete Version 5 development

• 100 Complete FOT&E

Total 5997

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
12054	11119	5937	5936
12176	10884		
-412			
11764	10771	5914	5997

C. Other Program Funding Summary

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
4547	5806	5759	5740	13845	13749	14018	14674	31200	115254
450	884	293	187	178	177	189	189	200	2747

Project D091

Page 3 of 9 Pages

Exhibit R-2 (PE 0603805A)

615

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603805A Combat Service Support Control
Systems Evaluation and Analysis

PROJECT

D091

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
V4 PDR			X*													
V4 CDR			X*													
V3 IOTE-II					X*											
ASARC III (FSP)						X										
FUE V3							X									
V4 Technical Test							X									
V5 PDR							X									
V5 CDR							X									
V4 LUT							X									
V3 IOC									X	X						
V5 FOTE									X							
Begin Fielding V4														X		
Begin Fielding V5																

*Milestone Complete

Project D091

Page 4 of 9 Pages

Exhibit R-2 (PE 0603805A)

616

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603805A Combat Service Support Control
Systems Evaluation and Analysis

PROJECT

D091

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Software Development	6909	7407	4289	4597
Program Management Support	2555	2004	1200	1200
COE/CHS/Common Support	1800	733	200	100
Operational Test and Evaluation	500	377	225	100
SBIR/STTR		250		
Total	11764	10771	5914	5997

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
TRW	C/CPFF	7/87	15731	15731	15731	0	0	0	0	0	15731
TRW	C/CPAF	2/91	65354	65354	53432	5715	6107	4289	4597	0	65254
Lockheed Martin	C/CPAF	12/94	TBD	TBD	1500	1194	1105	200	100	0	12685
COE/Com Spt	MIPR				3990	1300	445	200	100	0	6035
SBIR/STTR							250				250

Product Development Organizations

PM CSSCS			13451			659	495	275	275	0	15155
CECOM	MIPR		910			304	160	70	70	0	1514
SDC-LEE	MIPR		136			265	265	130	130	0	926
SDC-HUACHUCA	MIPR		485			165	100	50	50	0	850
EER/VITRO/	MIPR		2511			1162	1300	675	675	0	6323

Support and Management Organizations

Test and Evaluation Organizations			2289			310	165	150	100	0	3014
GOVT	MIPR		413			170	159	75		0	817
EPG/CAC	MIPR		1558			20	20			0	1598
OPTEC											

Project D091

Page 5 of 9 Pages

Exhibit R-3 (PE 0603805A)

617

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 1997	PROJECT			
BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603805A Combat Service Support Control						D091			
		Systems Evaluation and Analysis									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total		FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
				Prior to FY 1996							
Government Furnished Property											
CHS-TRW/LMC MIPR											
Product Development Property											
CHS-III CORPS MIPR											
Support and Management Property: None											
Test and Evaluation Property											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											

Project D091

Page 6 of 9 Pages

Exhibit R-3 (PE 0603805A)

Project D091

Page 6 of 9 Pages

Exhibit R-3 (PE 0603805A)

618

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

0603805A Combat Service Support Control

PROJECT

D246

4 - Demonstration and Validation

Systems Evaluation and Analysis

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D246 Tactical Communications System-Advanced Development	1464	1918	1759	1786	1860	1863	1877	1885	Continuing	Continuing

A. Mission Description and Budget Item Justification This project will validate the new Tactical Internet capability required for Force XXI. It provides definition, integration and testing of a mix of mature and prototype products which will be used to develop a Tactical Internet capability. The Tactical Internet will be the primary data communications infrastructure at Corps and below for Force XXI and will revolve around interconnecting a mix of existing (e.g.: SINGARS, SINGARS SIP, EPLRS, MSE TPN, etc.) and emerging communications devices using gateways and routers. Gateways will also provide the link to strategic levels. This capability will result in the tactical equivalent of the information highway and will support key battlefield functional areas to include logistics reporting, telemedicine, etc. The Tactical Internet will use and leverage commercial network standards and products. The "Internet Protocol" (IP) suite will be used to provide seamless communications with the capability to dynamically route data to hosts. It will be designed to facilitate technology insertion. The focus of this project will be to reduce the technical risk by assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI. New services and components will be added and tested as required for each iteration leading up to Force XXI.

Acquisition Strategy: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1996 Accomplishments:

- 579 Established Tactical Internet Testbed and baseline for the performance of hardware, software and protocols
- 535 Conducted near term experiments to address the internet architecture for the Task Force (TF) XXI Exercise
- 250 Provided technical support for the Task Force XXI field testing and training
- 100 Began incorporation of Digital Battlefield Communications (DBC)/Battlefield Information Transmission System (BITS) near term products into the tactical internet

Total 1464

FY 1997 Planned Program:

- 431 Provide on-site tactical internet technical support at Ft Hood and Ft Irwin for TF XXI
- 586 Insert new technologies and expand the testbed to address requirements for division size networks
- 250 Develop and provide empirical test data for the Division 98 simulation exercise
- 104 Incorporate latest DBC/BITS Products

Project D246

Page 7 of 9 Pages

Exhibit R-2 (PE 0603805A)

619

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1997	D246
4 - Demonstration and Validation	0603805A Combat Service Support Control Systems Evaluation and Analysis		
FY 1997 Planned Program: (continued)			
• 500	Research and test on the ground, new and improved video systems. Candidate video systems will be installed on an airborne platform for flight testing with the Near Term Digital Radio prototype and the Surrogate Digital Radio		
• 47	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)		
Total			1918
FY 1998 Planned Program:			
• 300	Resolve technical issues identified during the TF XXI and Division Simulation Exercise		
• 609	Insert latest technologies and expand the testbed to address requirements for corps size networks		
• 240	Develop and provide empirical test data for the Corps 99 Simulation Exercise		
• 110	Incorporate next set DBC/BITS Products		
• 500	Demonstrate advanced networking capabilities on an airborne platform by incorporating the NTDR production model on an airborne platform		
Total			1759
FY 1999 Planned Program:			
• 325	Resolve technical issues identified during the Corps exercise		
• 811	Optimize technical solutions for Force XXI fieldings		
• 150	Incorporate final set of DBC/BITS products		
• 500	Demonstrate a multiband/multimode capability on an airborne platform to show the insertion of the Future Digital Radio		
Total			1786
B. Project Change Summary			
FY 1997 President's Budget		FY 1997	FY 1999
Appropriated Value		2021	1922
Adjustments to Appropriated Value		1918	
FY 1998 Pres Bud Request			
		1918	1759
			1786

Project D246

Page 8 of 9 Pages

Exhibit R-2 (PE 0603805A)

620

Item 60

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603805A Combat Service Support Control

PROJECT

D246

Systems Evaluation and Analysis

	FY 1996	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown				
CECOM RDEC Internal Technical Support	790	1172	1028	1074
Contractor Technical Support	630	570	595	584
Travel & Misc. (Routers, Cables, Connectors)	44	129	136	128
SBIR/STTR		47		
Total	1464	1918	1759	1786

B. Budget Acquisition History and Planning Information: Not applicable

Project D246

Page 9 of 9 Pages

Exhibit R-3 (PE 0603805A)

621

Item 60

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY											
4 - Demonstration and Validation											
PE NUMBER AND TITLE											
0603807A Medical Systems - Advanced Development											
Development											
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	9878	9996	6765	8700	9326	9306	10939	10508	Continuing	Continuing	
D808 DoD Drug and Vaccine-Advanced Development	3598	3754	2202	3696	3687	3652	4046	4047	Continuing	Continuing	
D811 Military HIV Vaccine and Drug-Advanced Development	2532	2581	0	517	782	795	818	786	Continuing	Continuing	
D836 Combat Medical Materiel-Advanced Development	2593	2844	3723	3616	3752	3765	3997	3797	Continuing	Continuing	
D837 Soldier System Protection-Advanced Development	1155	817	840	871	1105	1094	2078	1878	Continuing	Continuing	

Mission Description and Budget Item Justification: This program element (PE) funds the advanced development of medical materiel necessary to field an effective capability for infectious diseases. The PE funds Advanced Development (AD) of systems for medical protection against naturally occurring diseases and Human Immunodeficiency Virus (HIV). This includes development and initial human testing of vaccines, prophylactic and therapeutic drugs. Additionally, the PE supports AD of field medical equipment and drugs essential for combat casualty care on all battlefields and OOTW while reducing logistical support requirements. The PE also funds AD systems which provide enhancement of or protection against physiological and psychological factors affecting cognitive and physical performance imposed by military systems, combat operations or the environment. This includes AD of vision corrective devices. Systems include resuscitators, blood substitutes, advanced sensors and diagnostic algorithms, field x-ray, and field production of medical grade oxygen, intensive care delivery platforms and litters, and Advanced Surgical Suites for Trauma Care (ASSTC). This program is primarily managed by the U.S. Army Medical Research and Materiel Command. This PE focuses on efforts to demonstrate general military utility to include demonstration and validation in the area of medical materiel and is properly placed in Budget Activity 4.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

PROJECT

D808

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D808 DoD Drug and Vaccine-Advanced Development	3598	3754	2202	3696	3687	3652	4046	4047	Continuing	Continuing

A. Mission Description and Justification: This project funds demonstration and validation of candidate medical countermeasures such as vaccines and drugs through safety, immunogenicity, and small scale efficacy testing in volunteers against naturally occurring infectious diseases of mission aborting potential. Work performed in laboratories and among troop populations is directed to prevention, diagnosis and treatment of viral, bacterial and parasitic disease, so as to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations. Some major contractors are The Salk Institute, Swiftwater, PA, University of Illinois, Chicago, IL, South Florida Research Institute, Miami, FL, and Kenya Medical Research Institute, Nairobi, Kenya.

Acquisition Strategy: Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required for FDA licensure.

FY 1996 Accomplishments:

- 1407 Continued safety and efficacy evaluations of antimalarial drugs, azithromycin, Halofantrine, WR238605 and antileishmanial drug WR6026. Initiate development of antimalarial drug arteether and topical antileishmanial drug paromomycin.
- 1027 Completed expanded Phase II trials of a malaria blood stage vaccine Spf66.
- 137 Completed Phase II testing of the recombinant Hantaan vaccine.
- 536 Continued Phase I/II trials of the *Campylobacter* vaccine.
- 491 Demonstrated and validated off the shelf technologies to develop telemedicine hardware and concepts in the prevention, diagnosis and treatment of infectious diseases.

Total 3598

FY 1997 Planned Program:

- 1768 Conduct expanded trial to evaluate safety and efficacy of antimalarial drugs WR238605, arteether, Halofantrine, and antileishmanial drugs WR6026 and paromomycin.
- 453 Conduct Phase I testing of a vaccine against hemorrhagic fever renal syndrome caused by Hantaan virus.
- 444 Demonstrate and validate off the shelf technologies to develop telemedicine hardware and concepts in the prevention, diagnosis and treatment of infectious diseases.

Project D808

Page 2 of 16 Pages

Exhibit R-2 (PE 0603807A)

623

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D808

Development

FY 1997 Planned Program: (continued)

•	49	Begin Phase I safety trials on the Leishmania Skin Test Antigen.
•	49	Initiate Phase II trials on Leishmaniasis Topical Treatment.
•	850	Complete Phase I/IIa safety/efficacy trials for RTS,S malaria vaccine.
•	49	Begin Phase II testing of <i>Shigella flexneri</i> vaccine.
•	92	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	3754	

FY 1998 Planned Program:

•	750	Conduct expanded Phase II field trials with RTS,S malaria vaccine.
•	181	Complete Phase I efficacy trials for detoxified LPS-OMP Group B meningococcal vaccine.
•	250	Initiate Phase I safety trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
•	200	Initiate Phase II clinical trials for <i>Shigella sonnei</i> vaccine.
•	80	Conduct Phase II study on Leishmania Skin Test Antigen.
•	250	Continue Phase I/II studies for <i>S. flexneri</i> vaccine.
•	491	Complete Phase II efficacy studies for antimalarial drug WR238605.
Total	2202	

FY 1999 Planned Program:

•	1025	Complete Phase I safety trials and initiate Phase I/II efficacy trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
•	350	Continue Phase II field trials with RTS,S malaria vaccine.
•	165	Conduct Phase I safety and immunogenicity trials for <i>Shigella sonnei</i> vaccine.
•	100	Conduct Phase II efficacy study for Leishmania Skin Test Antigen.
•	250	Initiate Phase I safety studies for Puumula vaccine.
•	500	Begin Phase I studies for a Dengue Tetravalent vaccine.
•	100	Initiate testing of a diagnostic kit for visceral Leishmania.
•	100	Initiate testing of a diagnostic kit for <i>P. falciparum</i> malaria.
•	1106	Initiate clinical studies for malaria vaccine, reduced immunization schedule.
Total	3696	

Project D808

Page 3 of 16 Pages

Exhibit R-2 (PE 0603807A)

624

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D808

Development

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

3845

3953

-355

3598

FY 1997

3835

3754

FY 1998

3790

FY 1999

3746

Change Summary Explanation: Funding: FY98: Funds reprogrammed (-1588) to higher priority requirements.

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

FY 1996		FY 1997		FY 1998		FY 1999	
1	2	3	4	1	2	3	4
Malaria Spf66 MLST 1/2							
<i>Campylobacter</i> MLST 1							
MLST 2 IPR							
Hantaan MLST Special IPR							
<i>Shigella flexneri</i> 2aSpecial IPR							
<i>Shigella flexneri</i> 602 MLST 1							
<i>Shigella flexneri</i> 602 MLST 2							
<i>Shigella sonnei</i> MLST 1							
Antimalarial Drug WR238605 MLST 2							
Antileishmanial Drug WR6026 MLST 2							
Antimalarial Drug Azithromycin MLST							
0/1							
Antimalarial Drug Halofantrine MLST 1							
Puumula Vaccine MSI							
Dengue, Tetravalent Vaccine MSI							
Diagnostic Kit, Visceral Leishmaniasis							
Diagnostic Kit, <i>P. falciparum</i>							
Malaria Vaccine, Reduced Schedule							
LSTA, MSI							

Malaria Spf66 MLST 1/2

Campylobacter MLST 1

MLST 2 IPR

Hantaan MLST Special IPR

Shigella flexneri 2aSpecial IPR*Shigella flexneri* 602 MLST 1*Shigella flexneri* 602 MLST 2*Shigella sonnei* MLST 1

Antimalarial Drug WR238605 MLST 2

Antileishmanial Drug WR6026 MLST 2

Antimalarial Drug Azithromycin MLST

0/1

Antimalarial Drug Halofantrine MLST 1

Puumula Vaccine MSI

Dengue, Tetravalent Vaccine MSI

Diagnostic Kit, Visceral Leishmaniasis

Diagnostic Kit, *P. falciparum*

Malaria Vaccine, Reduced Schedule

LSTA, MSI

Project D808

Page 4 of 16 Pages

Exhibit R-2 (PE 0603807A)

625

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
4 - Demonstration and Validation		0603807A Medical Systems - Advanced Development								D808			
		FY 1996			FY 1997			FY 1998			FY 1999		
		1	2	3	4	1	2	3	4	1	2	3	4
RTS, S, MS I					X*								
Cholera vaccine, special IPR													
LSTA, MS II													
* Milestone complete													

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced
Development

PROJECT

D808

<u>A. Project Cost Breakdown</u>							
	FY 1996	FY 1997	FY 1998	FY 1999			
Test & Evaluation	2904	2789	1539	3015			
Product Development	211	618	251	351			
Project Management	483	347	412	330			
Total	3598	3754	2202	3696			
<u>B. Budget Acquisition History and Planning Information</u>							
Performing Organizations							
Contractor or Government	Contract						
	Method/Type						
Performing Activity	or Funding						
	Vehicle						
	Award or Obligation						
	Date						
Product Development Organizations							
Contracts							
Salk Institute	CPFF	APR 1988					
Support and Management Organizations							
USAMMDA							
Contracts							
Test and Evaluation Organizations							
Walter Reed Army							
Inst of Research							
Army Laboratories							
Navy Laboratories							
Contracts							
Government Furnished Property: None							
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project							
	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete
							Program

Total
Prior to
FY 1996Project
Office
EACPerforming
Activity
EACAward or
Obligation
DateContract
Method/Type
or Funding
VehicleContractor or
Government
Performing ActivityBudget to
CompleteTotal
Program

Project D808

Page 6 of 16 Pages

Exhibit R-3 (PE 0603807A)

627

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603807A Medical Systems - Advanced Development								D811	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D811	Military HIV Vaccine and Drug-Advanced Development	2532	2581	0	517	782	795	818	786	Continuing	Continuing
<p>A. Mission Description and Justification: This project funds Congressionally-mandated, militarily relevant HIV research for demonstration and validation of candidate vaccines and drugs through safety, immunogenicity and small scale efficacy testing and behavioral intervention in volunteers. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment.</p> <p>Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government managed trials.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 1583 Conducted safety and immunogenicity studies in human volunteers in Thailand to determine the best candidate to transition. 949 Characterized potential cohorts for upcoming field trial. Total 2532 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 2517 Transition to Engineering and Manufacturing Development a vaccine for the prevention of HIV-1. 64 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. Total 2581 <p>FY 1998 Planned Program: Project not funded in FY 98.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 517 Evaluate vaccines for prevention of HIV to meet FDA data requirements to prove safety and efficacy. Total 517 											

Project D811

Page 7 of 16 Pages

Exhibit R-2 (PE 0603807A)

628

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced
Development

D811

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

2598

2671

-139

2532

FY 1997

2636

2581

FY 1998

1945

FY 1999

1461

Change Summary Explanation:

Funding: FY98: Funds reprogrammed (-1945) to higher priority programs.

FY99: Funds reprogrammed (-944) to higher priority programs.

C. Other Program Funding Summary: Not Applicable**D. Schedule Profile:** Multiple medical developmental products will advance through various events throughout the FY.

Project D811

Page 8 of 16 Pages

Exhibit R-2 (PE 0603807A)

629

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

PROJECT

D811

Development

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	2532	2581	0	517
Product Development	0	0	0	0
Project Management	0	0	0	0
Total	2532	2581		517

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None											
Support and Management Organizations: None											
Test and Evaluation Organizations											
Army Laboratories											
Contracts											

Government Furnished Property: None

Subtotal Product Development	0	0	0	0	0	0
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	2532	2581	2581	517	Cont	Cont
Total Project	2532	2581	2581	517	Cont	Cont

Project D811

Page 9 of 16 Pages

Exhibit R-3 (PE 0603807A)

630

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

PROJECT

D836

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D836 Combat Medical Materiel-Advanced Development	2593	2844	3723	3616	3752	3765	3997	3797	Continuing	Continuing

A. Mission Description and Justification: The project supports advanced development of new and improved systems essential for battlefield casualty care, patient transport and evacuation, and return to duty in support of special contingency and conventional force operations. Primary civilian contractors are University of Illinois, Chicago, IL and United Defense Limited Partnership, San Jose, CA.

Acquisition Strategy: Evaluate commercially developed materiel in government managed tests for hardening or other modification.

FY 1996 Accomplishments:

- 52 Conducted prototype electrochemical sterilization system.
- 179 Conducted evaluation of dental filmless imaging system.
- 1368 Developed Armored Treatment Vehicle (ATV) prototype; delivered to EXFOR, Ft. Hood, TX.
- 64 Demonstrated performance and safety of far forward suction device.
- 930 Demonstrated and validated off the shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties.
- Total 2593

FY 1997 Planned Program:

- 32 Conduct user and technical testing of a system for life support for trauma and transport.
- 117 Transition medical/dental imaging system to procurement.
- 1934 Modify US and allied military and commercial medical equipment used for patient examination, diagnosis and treatment in the field; incorporate technological advances into field medical equipment as they come on-line.
- 691 Demonstrate and validate off the shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties.
- 70 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 2844

FY 1998 Planned Program:

- 326 Initiate human safety and initiate efficacy studies of a microencapsulated antibiotic (cephalosporin) and a silver nylon burn dressing for treatment of combat casualties.
- 885 Conduct MEDITAG testing at Center for Total Access.

Project D836

Page 10 of 16 Pages

Exhibit R-2 (PE 0603807A)

631

Item 61

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																									
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1997	D836																									
4 - Demonstration and Validation	0603807A Medical Systems - Advanced Development																											
<p>FY 1998 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 6 Complete development and evaluation of the electrochemical sterilization system. • 809 Conduct technical and user testing of the Life Support for Trauma and Transport System. • 1697 Evaluate Armored Treatment Vehicle prototypes; (DT Testing at Yuma Proving Ground - 800), (Program Mgmt Support PM Bradley - 200), (Division XXI - 697) <p>Total 3723</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1357 Continue human safety and expand efficacy studies of a microencapsulated antibiotic (cephalosporin) and a silver nylon burn dressing for treatment of combat casualties. • 812 Continue MEDITAG testing. • 150 Initiate development and evaluation of microwave infusion warming device. • 685 Complete technical and user testing of the Life Support for Trauma and Transport System. • 612 Evaluate new concepts for a total IV anesthesia system. <p>Total 3616</p> <p>B. Project Change Summary</p> <table border="0"> <tr> <td>FY 1997 President's Budget</td> <td>FY 1996</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>2660</td> <td>2905</td> <td>2893</td> <td>2867</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>2734</td> <td>2844</td> <td></td> <td></td> </tr> <tr> <td>FY 1998 Pres Bud Request</td> <td>-141</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>2593</td> <td>2844</td> <td>3723</td> <td>3616</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1998: Funds reprogrammed (+830) into this project for the Life Support for Trauma System. FY 1999: Funds reprogrammed (+749) into this project for the Life Support for Trauma System.</p> <p>C. Other Program Funding Summary: Not Applicable.</p>				FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999	Appropriated Value	2660	2905	2893	2867	Adjustments to Appropriated Value	2734	2844			FY 1998 Pres Bud Request	-141					2593	2844	3723	3616
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999																								
Appropriated Value	2660	2905	2893	2867																								
Adjustments to Appropriated Value	2734	2844																										
FY 1998 Pres Bud Request	-141																											
	2593	2844	3723	3616																								

Project D836

Page 11 of 16 Pages

Exhibit R-2 (PE 0603807A)

632

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

Development

PROJECT

D836

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1996	FY 1997	FY 1998	FY 1999
1	1	4	1	1
2	2	2	2	2
3	3	3	3	3
4			4	4

Silver Nylon Burn Dressing MLST 0

Self-Contained Ventilator MLST 1/3 IPR

Medical-Dental Filmless Imaging System

MLST 2 IPR

Intraosseous Infusion Device MLST 1/3

IPR

Armored Treatment and Transport Vehicle

MS 1 1/2

MS 3

Field Anesthesia Machine MS 1

MS 2

Life Support for Trauma and Transport

MS 1

MS 2

MS 3

Microwave Infusion warming device

* Milestone complete

Project D836

Page 12 of 16 Pages

Exhibit R-2 (PE 0603807A)

633

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D836

Development

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation	741	567	595	883
Product Development	1098	1910	2479	2220
Project Management	754	367	649	513
Total	2593	2844	3723	3616

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

5930

1776

1870

414

2786

12776

Project D836

Page 13 of 16 Pages

Exhibit R-3 (PE 0603807A)

634

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

PROJECT

D837

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D837 Soldier System Protection-Advanced Development	1155	817	840	871	1105	1094	2078	1878	Continuing	Continuing

A. Mission Description and Justification: This project supports demonstration and validation of preventive medicine materiel, including devices, pharmacologicals and other tools, to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures.

Acquisition Strategy: Test and evaluate materiel in government managed trials to meet fielding requirements.

FY 1996 Accomplishments:

- 887 Demonstrated Digital Field Medical Treatment Facility telemedicine appliqué.
 - 268 Develop coupling attachments for feasibility study on M-40 protective mask blower as an improved air circulation source for chemical warfare agent protective patient wrap; developed alternative air sources using non-developmental item acquisition strategy.
- Total 1155

FY 1997 Planned Program:

- 11 Continue evaluation of Combat Stress Analysis System.
 - 50 Continue to prepare specifications and fabrication of Armored Ambulance Prototype.
 - 736 Validate far-forward telementoring and Mobile Medical Mentoring vehicle tactical telemedicine appliqué through participation in digital Force XXI Bde-Corps Advanced Warfighting Exercise.
 - 20 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 817

FY 1998 Planned Program:

- 795 Evaluation alternatives for Warfighting Personnel Status Monitoring.
 - 45 Complete evaluation of Combat Stress Analysis System.
- Total 840

Project D837

Page 14 of 16 Pages

Exhibit R-2 (PE 0603807A)

635

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997																									
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																										
4 - Demonstration and Validation	0603807A Medical Systems - Advanced Development	D837																										
<p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 829 Warfighting Personnel Status Monitoring Limited User Assessment Testing, Advanced Technology Demonstration. 42 Initiate production prototyping of Combat Stress Analysis System. <p>Total 871</p>																												
<p>B. Project Change Summary</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1996</th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1997 President's Budget</td> <td>1185</td> <td>835</td> <td>829</td> <td>857</td> </tr> <tr> <td>Appropriated Value</td> <td>1218</td> <td>817</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-63</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1998 Pres Bud Request</td> <td>1155</td> <td>817</td> <td>840</td> <td>871</td> </tr> </tbody> </table>					FY 1996	FY 1997	FY 1998	FY 1999	FY 1997 President's Budget	1185	835	829	857	Appropriated Value	1218	817			Adjustments to Appropriated Value	-63				FY 1998 Pres Bud Request	1155	817	840	871
	FY 1996	FY 1997	FY 1998	FY 1999																								
FY 1997 President's Budget	1185	835	829	857																								
Appropriated Value	1218	817																										
Adjustments to Appropriated Value	-63																											
FY 1998 Pres Bud Request	1155	817	840	871																								
<p>C. Other Program Funding Summary: Not Applicable.</p>																												
<p>D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.</p>																												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

PROJECT

D837

Development

A. Project Cost Breakdown

Test & Evaluation	FY 1996	FY 1997	FY 1998	FY 1999
	0	0	0	0
Product Development	1103	797	798	827
Project Management	52	20	42	44
Total	1155	817	840	871

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government	Method/Type	Award or	Performing	Total
Performing	or Funding	Obligation	Activity	Prior to
Activity	Vehicle	Date	EAC	FY 1996

Product Development Organizations

Contracts

Support and Management Organizations

USAMMDA

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development	1103	797	798	827	Cont	3525
Subtotal Support and Management	52	20	42	44		158
Subtotal Test and Evaluation	1155	817	840	871		3683
Total Project						

Project D837

Page 16 of 16 Pages

Exhibit R-3 (PE 0603807A)

637

Item 61

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603854A Artillery Systems Advanced Development									
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		0	238590	324380	294495	47102	0	0	0	0	904567
D505 Crusader - Advanced Development		0	235795	322291	293920	47102	0	0	0	0	899108
DC68 TRACTOR YEOMAN		0	2795	2089	575	0	0	0	0	0	5459

Mission Description and Budget Item Justification: This program element supports the Demonstration and Validation efforts for the Crusader - AD Program. Formerly, these efforts were included in PE 0603645A, Armored Systems Modernization (ASM) Advanced Development as Projects D409 Advanced Field Artillery System-Advanced Development and DB88 Future Armored Recovery Vehicle-Advanced Development. This single project combines both Crusader Self Propelled Howitzer-Advanced Development (D409) and Crusader Re-Supply Vehicle-Advanced Development (DB88) into one line in FY 97 based upon the 15 Nov 94 Defense Acquisition Board (DAB) review. The Crusader system is the Army's next generation SPH and RSV. Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. This program element focuses on efforts associated with the technology demonstration and validation of Crusader and is correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	PROJECT
4 - Demonstration and Validation		0603854A Artillery Systems Advanced Development										February 1997	D505
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D505	Crusader - Advanced Development	0	235795	322291	293920	47102	0	0	0	0	899108		
<p>A. Mission Description and Justification: This project supports the demonstration and validation efforts for the Crusader - AD Program. Formerly, these efforts were included in PE 0603645A, Armored Systems Modernization (ASM) Advanced Development as Projects D409 AFAS-AD and DB88 FARV-AD. This single project combines both Crusader Self Propelled Howitzer-Advanced Development (D409) and Crusader Re-Supply Vehicle-Advanced Development (DB88) into one line in FY 97 based upon the 15 Nov 94 Defense Acquisition Board (DAB) review. The Crusader system is the Army's next generation SPH and artillery RSV. Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent mission execution. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH.</p> <p>Acquisition Strategy: Not applicable</p> <p>FY 1996 Accomplishments: See Projects D409 and DB88 in PE 0603645A for accomplishments.</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 205346 Product development: Continue developmental efforts under the Crusader developmental Phases I & II contract; continue efforts in support of maturation and integration of critical technologies. Initiate prototype fabrication and demonstration. Conduct system design review. Conduct Phase I IPR 19067 Support and management: Continue project management efforts, to include scientific and engineering analysis, product development team support, and engineering management services. 5620 Test and evaluation: Purchase propellant, ammunition and fuzes required for the initiation of Engineering Development Testing (EDT)-A testing; begin EDT-A testing. 5762 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs <p>Total 235795</p>													

Project D505

Page 2 of 6 Pages

Exhibit R-2 (PE 0603854A)

639

Item 62

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0603854A Artillery Systems Advanced

D505

- 293990 Product development: Continue developmental efforts under the Crusader development Phase II contract. Continue Prototype fabrication and demonstration.

- **19990 Support and management:** Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.

- 8311 Test and evaluation: Purchase ammo for EDT and continue EDT-A testing.

Total	322291
-------	--------

- 261423 Product development: Continue developmental efforts under the Crusader development Phase II contract. Initiate long lead item buys. Complete Prototype fabrication and demonstration.

- **20570 Support and management:** Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.

- 11927 **Test and evaluation:** Continue EDT-A testing and initiate combined Developmental Testing/Operational Testing.

Total	293920
-------	--------

FY 1997 President's Budget	0	255916	324285	296054
Appropriated Value		235795		

Adjustments to Appropriated Value

FY 1998 President's Budget Request

[illegible]

RDTE, A Budget Activity 4

PE 0603645A, Project D409 Crusader SPH-AD

RDTE, A Budget Activity 4

PE 0603645A, Project DB88 Crusader RSV-AD

RDTE, A Budget Activity 5

PE 0604854A, Project D503 Crusader - ED

RDTE, A Budget Activity 4

PE 0604854A, Project D2KT Crusader OT

Project D505

Page 3 of 6 Pages

Exhibit R-2 (PE 0603854A)

Item 62

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation**0603854A Artillery Systems Advanced****D505****Development****C. Other Program Funding Summary**RDTE, A Budget Activity 5
PE 0604645A, Project D175 MOFAFY 1996 6058
FY 1997 6585To
Compl 0
Total
Cost 36159**D. Schedule Profile**FY 1996
2 3FY 1997
2 3
XFY 1998
2 3FY 1999
2 3

Award Dev Phases I/II Contract System

Design Review

Dev Phase I In Process Review
(Authorization to enter Phase II)

Integration Checkout

SPH/RSV available for test

X

X

Project D505

Page 4 of 6 Pages

Exhibit R-2 (PE 0603854A)

641

Item 62

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE						
4 - Demonstration and Validation		0603854A Artillery Systems Advanced Development						D505
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999			
Product Development			205346	293990	261423			
Support and Management			19067	19990	20570			
Test and Evaluation			5620	8311	11927			
SBIR/STTR			5762					
Total			235795	322291	293920			
B. Budget Acquisition History and Planning Information								
Performing Organizations								
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998
								FY 1999
								Budget to Complete
								Total Program
Product Development Organizations								
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD	TBD			179143	246531
ARDEC, Picatinny Arsenal, NJ	PO						23258	13904
TACOM, Warren, MI	PO						867	469
ARL, Aberdeen Proving Ground, MD	PO						1378	1123
Various OGAs							375	375
Various contracts							325	75
Support and Management Organizations								
PM Crusader, Picatinny Arsenal, NJ							4472	5360
ARDEC, Picatinny Arsenal, NJ	PO						9084	9000
								9000
								600
								27684
Exhibit R-3 (PE 0603854A)								
Page 5 of 6 Pages								
Project D505								

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603854A Artillery Systems Advanced Development

D505

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ACALA, Rock Island, IL	PO						148	150	160	80	538
TACOM, Warren, MI	PO						2008	2100	2200	1150	7458
ARL, Aberdeen Proving Ground, MD	PO						800	830	860	450	2940
Various OGA's Various Contracts SBIR/STTR							956	1000	1050	600	3606
Test and Evaluation Organizations							1599	1550	1700	400	5249
TECOM, Yuma Proving Grd, AZ, CSTA, APG, MD	PO						5762				5762
							5620	8311	11927	1167	27025
Government Furnished Property: None											
Subtotal Product Development							205346	293990	261423	41815	802574
Subtotal Support and Management							24829	19990	20570	4120	69509
Subtotal Test and Evaluation							5620	8311	11927	1167	27025
Total Project							235795	322291	293920	47102	899108

Project D505

Page 6 of 6 Pages

Exhibit R-3 (PE 0603854A)

643

Item 62

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603856A SCAMP BLK II (SPACE)

PROJECT

D389

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	D389 SCAMP BLK II*	0	8250	73	9669	15668	34284	26823	24833	Continuing

*\$5.5M SCAMP BLK II Engineering Feasibility Efforts (EFE) reported under 0303142A.D386 in FY 1996

A. Mission Description and Budget Item Justification: Project D389 - SCAMP BLK II. The Single Channel Anti-Jam Manportable (SCAMP) BLK II Terminal will be a manpackable, satellite communications terminal to be employed by units that require range extension for command and control communications. Block II will be used by priority ground tactical users to transmit and receive intelligence, command and control traffic. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. It will provide Low Data Rate (LDR) secure voice at 2400 bps and secure data at 75-2400 bps, as well as interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit. The SCAMP BLK II will have embedded COMSEC, TRANSEC and GPS. In addition to operation on MILSTAR satellites, the SCAMP Block II will operate on all satellites which utilize the MIL-STD-1582C LDR waveform. It will operate in the transmit, receive or standby mode throughout an entire mission (typically 30 days). SCAMP BLK II EHF terminal will provide direct support to the tactical warfighter mobile forces with anti-jam protection, low probability of intercept, and low probability of detection. Engineering Feasibility Efforts (EFE) to develop the SCAMP BLK II in the range of 12-15 pounds was approved in the Acquisition Decision Memorandum. EFE began in FY96 and will continue through FY99. These efforts will provide confidence in technical approach and lead to a Milestone II Engineering Manufacturing Phase. This project provides for the demonstration and validation of advanced technologies and is therefore appropriately funded in Budget Activity 4.

Acquisition Strategy: SCAMP BLK II will be a manpackable terminal in the 12-15 lb. range. SCAMP BLK II began Engineering Feasibility Efforts (EFE) in FY96 placing emphasis on downsizing the following subsystems: Radio Frequency (RF) Generator, Digital Processor, Transmitter and Antenna. These subsystems will utilize technologies such as Millimeter Microwave Integrated Circuits (MIMIC), custom Very Large Scale Integrated Circuits (VLSIC) and increased efficiency power devices.

FY 1996 Accomplishments: Program funded under PE 0303142A.D386 (See asterisked note above)

FY 1997 Planned Program:

- 5963 Implements integration of Engineering Feasibility Efforts (EFE) for functional prototype terminals
- 763 Continues paging prototype system efforts
- 1331 Continues Defense Advanced Research Project Agency (DARPA) advanced communications technologies and System engineering efforts
- 193 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 8250

Project D389

Page 1 of 3 Pages

Exhibit R-2 (PE 0603856A)

644

Item 63

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

0603856A SCAMP BLK II (SPACE)

PROJECT

D389

4 - Demonstration and Validation

FY 1998 Planned Program:

- 73 Continue prototype development
- Total 73

FY 1999 Planned Program:

- 4985 Completes Prototype development
- 3534 Test, evaluate and demonstrate the prototype
- 1150 Conduct Milestone II Decision Review
- Total 9669

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
0	8080	9302	3663
0	7910		
0			
0	8250	73	9669

Change Summary Explanation:

Funding: FY97: Not a new start. Funds reprogrammed to 0603856A.D389 from 0303142A.D386.

FY98: (-9229) Funds reprogrammed to higher priority requirements

FY99: (+6006) Continue/complete prototype development/evaluations/demonstrations/reviews

C. Other Program Funding Summary

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
0	0	0	0	0	0	30052	62569		

Other Procurement Army 2 - SSN: BC 4110

D. Schedule Profile

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	4	1	2	3	4	4

Continue EFE

Prototype Development and Integration

Prototype Demonstrations/Evaluations

MSII

X

X

Project D389

Page 2 of 3 Pages

Exhibit R-2 (PE 0603856A)

645

Item 63

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603856A SCAMP BLK II (SPACE)

PROJECT

D389

A. Project Cost Breakdown				FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contractor					2013	0	737		
Government Systems Engineering and Project Management					6044	73	8932		
SBIR/STTR					193				
Total					8250	73	9669		
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
Product Development Organizations									
Other Contracts	C-CP	Various	N/A	TBD			1793	0	737
Govt Support	MIPR/PWD	Various		TBD			2929	0	4248
SBIR/STTR							193		
Support and Management Organizations									
Other Contracts	MIPR/PWD	Various		TBD			1140	0	887
Govt Support	MIPR/PWD	Various		TBD			666	73	1175
Lincoln Labs	MIPR	Various		TBD			255	0	200
Lab Activities	MIPR	Various		TBD			1274	0	2422
Test and Evaluation Organizations: None									
Government Furnished Property: None									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project D389

Page 3 of 3 Pages

Exhibit R-3 (PE 0603856A)

646

Item 63

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604201A Aircraft Avionics

PROJECT

DC97

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC97 Aircraft Avionics	20073	14694	21669	12729	6111	1107	52427	36759	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Program Element funds the development of avionics systems required to horizontally and vertically integrate the battlefield (commonly referred to as "digitization of the battlefield"). The following tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems, therefore, the PE is correctly placed in Budget Activity 5.

Project DC97 - Aircraft Avionics:

- The AN/ARC-220 Nap-Of-Earth (NOE) Communications High Frequency (HF) Radio provides a long-range (300 kilometers), non-line-of-sight digital and voice communication capability which is reliable, secure, easy to operate, with automatic link establishment and electronic counter-countermeasures. The AN/ARC-220 will be form/fit interchangeable with the AN/ARC-199 HF radio, meet military standards for compatibility with the 1553 data bus, night vision lighting, data transmission, and shipboard operations.
- The Army Airborne Command and Control System (A2C2S) functions as a highly mobile command post. When mounted in the UH-60 helicopter with auxiliary equipment, it provides tactical voice, data, and imagery digitized battlefield communications both in secure and nonsecure modes for corps, division, and brigade commanders. The system provides battle commanders access to critical situational awareness and off-board national asset intelligence information via satellite communications. It also provides digitized battlefield communications links with Army combined arms team members, joint service and combined force elements, and intercommunications facilities for up to six operators, and joint interoperability as well as maritime and air traffic control communications. The A2C2S is in response to real world needs of combat maneuver commanders to perform highly mobile and responsive digital, voice, and imagery command and control (C2) functions in the UH-60 helicopter. The UH-60 A2C2S system will enable the commander and essential staff to remain highly mobile with the capability to interject critical C2 across the designated battle area without sacrificing access to information products or jeopardizing continuity of operations due to command post relocation. Interoperability is enhanced with this system by providing the capability to communicate digitally with Navy or Air Force close air support as well as relaying target information. This system will allow Army aviation forces access to C2 and situational awareness information for conduct of close, deep, rear, and security operations. The A2C2S is used to provide C2 for disaster relief, peacekeeping, drug interdiction, and both low and high intensity conflict missions. The A2C2S will play a major role in eliminating costly fratricide incidents via the capability to closely monitor and control operations. Satellite communications provide access to tactical communication systems and enable communication with the force and command structure from Joint Chiefs of Staff (JCS) down to battalion when required.

Acquisition Strategy: This project is comprised of multiple systems. The A2C2S is being developed by the Naval Research Laboratory. The production contract will be competitively awarded.

FY 1996 Accomplishments:

- 2859 Continued EMD for AN/ARC-220 NOE Communications HF Radio (5 prototypes)
- 479 Continued program management support for the AN/ARC-220 NOE Communications HF Radio

Project DC97

Page 1 of 6 Pages

Exhibit R-2 (PE 0604201A)

647

Item 64

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				DC97
5 - Engineering and Manufacturing Development	0604201A Aircraft Avionics				
FY 1996 Accomplishments: (continued)					
•	9707	Initiated development of Enhanced Joint Communications Interface Terminals (JCIT): four A2C2S prototypes			
•	311	Continued design and development of A2C2S Workstation Consoles			
•	538	Initiated technical documentation for A2C2S			
•	327	Initiated A2C2S Workstation Software			
•	837	Continued development of A2C2S Antenna Interface Module (AIM) - Phase II			
•	3710	Initiated test and integration for A2C2S			
•	919	Continued program management support for the A2C2S			
•	386	Initiated systems engineering, logistics processes for A2C2S			
Total	20073				
FY 1997 Planned Program:					
•	8484	Continue development of Enhanced JCIT, workstation consoles and other A2C2S prime mission equipment			
•	1211	Continue development of A2C2S Antenna Interface Module (AIM)			
•	1224	Continue development of A2C2S Workstation Software			
•	553	Continue test and integration procedures for A2C2S Engineering Development Model			
•	1957	Continue system engineering, logistics, and technical documentation for A2C2S			
•	906	Continue program management support for the A2C2S			
•	359	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs			
Total	14694				
FY 1998 Planned Program:					
•	14806	Continue development of Enhanced JCIT, workstation consoles and other A2C2S prime mission equipment			
•	2600	Continue development of A2C2S Antenna Interface Module (AIM)			
•	2038	Continue development of A2C2S Workstation Software			
•	525	Continue test and integration procedures for A2C2S Engineering Development Model (EDM)			
•	550	Continue system engineering, logistics, and technical documentation for A2C2S			
•	1150	Continue program management support for the A2C2S			
Total	21669				
FY 1999 Planned Program:					
•	9679	Continue development of Enhanced JCIT, Workstation Consoles and other A2C2S prime mission equipment			
•	1000	Complete development of A2C2S Antenna Interface Module (AIM)			
Project DC97					
			Exhibit R-2 (PE 0604201A)		

Page 2 of 6 Pages

648

Item 64

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604201A Aircraft Avionics

PROJECT

DC97

FY 1999 Planned Program: (continued)

- | | | |
|---|-------|--|
| • | 100 | Complete development of A2C2S Workstation Software |
| • | 400 | Continue test and integration procedures for A2C2S Engineering Development Model (EDM) |
| • | 500 | Continue system engineering, logistics, and technical documentation for A2C2S |
| • | 1050 | Continue program management support for the A2C2S |
| | 12729 | |
| | Total | |

12729

B. Project Change Summary

FY 1997 President's Budget	21442	15008	14787	1335
Appropriated Value	22044	14694		
Adjustments to Appropriated Value	-1971			
FY 1998 Pres Budget Request	20073	14694	21669	12729

Change Summary Explanation: Funding: FY98 (+6882) and FY99 (+11394) increased to continue EMD.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl.	Cost
Aircraft Procurement, Army (APA):	17320	42047	47450	43395	45803	0	24283	20511	Cont	Cont
Airborne Communications -AA0705 BLIN 1033*									53600	189398
Airborne Command and Control Console AA0710 BLIN 1026**				12890	13424	18243	37641	53600		

* Represents ARC-220 only, which is a portion of the funding in SSN AA0705.

** Represents A2C2S only, which is a portion of the funding in SSN AA0710.

D. Schedule Profile:

	FY 1996	FY 1997	FY 1998	FY 1999
D. Schedule Profile:				
Initiated Preproduction Qualifications - AN/ARC-220 HF radio	X*			
Continued AN/ARC-220 NDI EMD Effort	X			
Initiate development of Enhanced JCIT Prototypes	X*			
Continue design and Development of A2C2S Workstation Consoles	X	X	X	X

Project DC97

Page 3 of 6 Pages

Exhibit R-2 (PE 0604201A)

649

Item 64

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE				February 1997	
5 - Engineering and Manufacturing Development		0604201A Aircraft Avionics		FY 1998				PROJECT DC97	
D. Schedule Profile:		FY 1996		FY 1997				FY 1999	
		1	2	3	4	1	2	3	4
Develop Technical Documentation - A2C2S Test and Integration Procedures		X							
Initiate A2C2S Prototype Integration		X*							
Initiate A2C2S Tests and Demonstrations		X*							
Continue development of A2C2S Antenna Interface Module (AIM)		X				X			
Initiate/continue A2C2S Systems Engineering, Logistics Processes			X*			X			
Continue development of Enhanced JCIT, Work Station Consoles and other Prime Mission Equipment						X			
Continue development of A2C2S Workstation Software		X				X			
* Denotes completed effort									

Project DC97

Page 4 of 6 Pages

Exhibit R-2 (PE 0604201A)

650

Item 64

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604201A Aircraft Avionics

PROJECT

DC97

A. Project Cost Breakdown

Product Development

Program Management Support:

Test and Evaluation Support

SBIR/STTR

Total

FY 1996

17336

1398

1339

FY 1997

13429

906

359

FY 1998

20519

1150

21669

FY 1999

11679

1050

12729

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or

Method/Type

Award or

Obligation

Date

Aug 94

Performing

Activity

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Project DC97

Page 5 of 6 Pages

Exhibit R-3 (PE 0604201A)

651

Item 64

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE						
5 - Engineering and Manufacturing Development					0604201A Aircraft Avionics						DC97
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations (cont)											
Army Research Lab/ Air Force			129	129	20	80	29			0	129
Test and Evaluation Organizations:											
USA TEXCOM	MIPR		1339	1339		1339	359				1339
SBIR/STTR											359
Government Furnished Property: Not Applicable											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					20314	17336	13429	20519	11679	Cont	Cont
					3496	1398	906	1150	1050		Cont
						1339	359				1698
					23810	20073	14694	21669	12729	Cont	Cont

Project DC97

Page 6 of 6 Pages

Exhibit R-3 (PE 0604201A)

Project DC97

Page 6 of 6 Pages

Exhibit R-3 (PE 0604201A)

652

Item 64

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604220A Armed, Deployable OH-58D										February 1997		D538	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost				
D538	Crew Station Mission Equipment Trainer (CSMET)	688	1130	0	0	0	0	0	0	0	1818				
<p>A. Mission Description and Budget Item Justification: The Crew Station Mission Equipment Trainer (CSMET) is a desktop simulation training device that is designed to support training requirements for the OH-58D Kiowa Warrior flight crew. The CSMET effort responds to the lack of training devices, simulators or simulations (TDSS) available to fielded Kiowa Warrior units. Currently, the aircraft itself provides the only primary sustainment training device. Training provided through the use of the actual aircraft is at best limited due to the inability to employ total system capabilities under combat conditions, i.e., weapon systems. When the actual aircraft is not available, the aviator cannot continue to practice crew skills. As a result, aircrew skills decay rapidly. Maintaining a high level of aircrew skill has direct impact on combat readiness and proficiency. The CSMET will support refresher and sustainment training of those skills required to initialize, operate and employ the weapons systems, aviation survivability equipment, automatic target handover system, communication and navigation equipment, mast mounted sight, data transfer system, Aviator Night Vision Imaging System (ANVIS) display, and airborne video tape recorder. The CSMET will network with other simulation devices for collective training. The project in this Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is, therefore, correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: The acquisition strategy is based primarily on the integration of government-furnished data and commercially available non-developmental items. Government-owned OH-58D Kiowa Warrior Cockpit Procedures Trainer Ada software will be integrated into the computer and image generator hardware of choice based on maximum compatibility and interoperability with other aviation simulation systems. Acquisition will be accomplished in four phases -- pre-prototype, prototype, production, and support/sustainment -- and will be accomplished utilizing an Integrated Product Team approach among various government agencies.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 510 Awarded Phase I Development Contract - Study Effort and Development of Prototype • 178 Government support Total 688 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 778 Award Phase II Development Contract - Prototype Build/Systems Integration • 40 Award Contract - Upgrade Government-Furnished Equipment • 242 Maintenance support for operational testing development and for operational testing • 42 Government Support • 28 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs Total 1130 															

Project D538

Page 1 of 3 Pages

Exhibit R-2 (PE 0604220A)

653

Item 65

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604220A Armed, Deployable OH-58D				February 1997		D538	
FY 1998 Planned Program: Project not funded in FY 98									
FY 1999 Planned Program: Project not funded in FY 99									
B. Project Change Summary									
FY 1997 President's Budget		FY 1996	FY 1997	FY 1998	FY 1999	FY 1999			
Appropriated Value		706	1154	0	0	0			
Adjustments to Appropriated Value		726	1130						
FY 1998 Pres Bud Request		-38							
		688	1130	0	0	0			
C. Other Program Funding Summary									
APA Budget Activity 2		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003 To Comp
AZ2200 Kiowa Warrior (CSMET)*				3230	7390	4210	2550		Total Cost
									17380
*Represents only part of the funding in SSN AZ2200.									
D. Schedule Profile									
Award Development Contract (May 96)		FY 1996							FY 1999
Design Phase (May 96)		1	2	3	4	1	2	3	4
Initiate Build Phase (Nov 96)				X*					
Begin Test Phase (Feb 97)				X*					
*Denotes completed effort									
							</		

Project D538

Page 2 of 3 Pages

Exhibit R-2 (PE 0604220A)

654

Item 65

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604220A Armed, Deployable OH-58D

D538

A. Project Cost Breakdown

Engineering Development	FY 1996	FY 1997	FY 1998	FY 1999
Prototype Build/System Integration	688	703		
Developmental Testing		115		
Government Support of Developmental Testing		22		
Operational Testing		242		
Government Support of Operational Testing		20		
SBIR/STTR		28		
Total	688	1130		

B. Budget Acquisition History and Planning Information: Not Applicable

Project D538

Page 3 of 3 Pages

Exhibit R-3 (PE 0604220A)

655

Item 65

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604223A Comanche

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	284131	331424	282009	371927	441309	586978	634102	634580	Continuing	Continuing
DC72 T800 Engine Engineering Development (LH)	35885	41234	44533	41107	34690	33498	32384	31288	Continuing	Continuing
D2LT Comanche Operational Test	0	0	0	0	36	107	333	768	Continuing	Continuing
D327 Comanche	248246	290190	237476	330820	406583	553373	601385	602524	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for the development and operational testing and evaluation of the RAH-66 Comanche and the T800 growth engine. The Comanche is a multi-mission aircraft optimized for the critical battlefield mission of tactical armed reconnaissance. It provides a globally self-deployable attack platform for light/contingency forces. Comanche is the solution to the reconnaissance deficiencies (no night/adverse weather/high/hot/stand-off capability) and is a key component on the digitized battlefield in winning the information war. The Comanche will replace the obsolete Vietnam era fleet (AH-1, OH-6, and OH-58A/C). Project DC72 provides for development and qualification of the T800 and growth engines and air vehicle support for integration of the same into the Comanche aircraft. Project D2LT includes funding for the operational testing of Comanche to include Comanche simulation accreditation for Limited User Test and Initial Operational Test & Evaluation. Project D327 provides for development of the airframe, mission equipment package, and integration of the whole system to include training and logistic support. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition to the engineering and manufacturing development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Page 1 of 10 Pages

Exhibit R-2 (PE 0604223A)

656

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

DC72

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC72 T800 Engine Engineering Development (LH)	35885	41234	44533	41107	34690	33498	32384	31288	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC72 - T800 Engine Engineering Development (LH): This project includes tasks to design, develop and qualify an advanced technology engine. It includes the development and qualification of the T800 and growth engines and air vehicle support for integration of the same into the Comanche aircraft. The growth engine is for the Army's RAH-66 Comanche and other applications.

Acquisition Strategy: Continue work with current contractor leading to FAA certification, military qualification and eventual production.

FY 1996 Accomplishments:

- 7968 Continued basic engine air vehicle support
- 18339 Continued growth engine development and conducted growth engine Critical Design Review (CDR)
- 9578 Continued contractor development testing
- Total 35885

FY 1997 Planned Program:

- 8535 Continue basic engine air vehicle support
- 13969 Continue growth engine development
- 13663 Continue contractor development testing
- 4079 Begin manufacturing growth engine for flight test
- 988 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 41234

FY 1998 Planned Program:

- 10475 Continue basic engine air vehicle support
- 13960 Continue growth engine development
- 12752 Continue contractor development testing
- 7346 Continue manufacturing growth engines for flight test
- Total 44533

Project DC72

Page 2 of 10 Pages

Exhibit R-2 (PE 0604223A)

657

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		DC72
5 - Engineering and Manufacturing Development		0604223A Comanche		
FY 1999 Planned Program:				
• 7744	Continue basic engine air vehicle support			
• 14974	Continue growth engine development			
• 13678	Continue contractor development testing			
• 4711	Continue manufacturing growth engines for flight test			
Total	41107			
B. Project Change Summary				
FY 1997 President's Budget		FY 1997	FY 1998	FY 1999
Appropriated Value		35616	35663	35531
Adjustments to Appropriated Value		41234		
FY 1998 BES/Pres Bud Request			44533	41107
Change Summary Explanation: Funding - FY98 (+8870) and FY99 (+5576) change is primarily due to a realignment of funds between the Comanche air vehicle and the engine, and reductions for savings in matrix support. FY97 (+5618) Congressional increase.				
C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.				
D. Schedule Profile				
		FY 1996	FY 1997	FY 1998
		1 2 3 4	1 2 3 4	1 2 3 4
Continue basic engine air vehicle support	X			
Continue growth engine development	X			
Continue contractor development testing	X			
Begin mfg growth engines for flight test	X			
Continue basic engine air vehicle support		X		
Continue growth engine development		X		
Continue contractor development testing		X		
Continue basic engine air vehicle support			X	
Continue growth engine development			X	
Continue contractor development testing			X	
Continue mfg growth engines for flt test				X
Continue basic engine air vehicle support				X
Continue growth engine development				X
Continue contractor development testing				X
Continue mfg growth engines for flt test				X

Project DC72

Page 3 of 10 Pages

Exhibit R-2 (PE 0604223A)

658

Item 66

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604223A Comanche

DC72

Project DC72

Exhibit R-3 (PE 0604223A)

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604223A Comanche

PROJECT

D327

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D327 Comanche	248246	290190	237476	330820	406583	553373	601385	602524	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D327 - Comanche: The Comanche helicopter is a highly sustainable and operationally flexible air cavalry system, incorporating significant reductions in personnel and support equipment, capturing the latest combat technologies and capable of accepting upgrades to meet ever-changing threats. It will dominate the battlefield in the close, deep and rear operations; provide a decisive air cavalry capability in day, night, and adverse weather. It will be operationally tailorable to regional conflicts and provide the battle commander with timely, detailed reconnaissance information and an unprecedented level of lethality.

Acquisition Strategy: Continue work with current contractor leading to Engineering and Manufacturing Development and eventual production.

FY 1996 Accomplishments:

- 24825 Began digitization effort
- 176357 Continued Dem/Val prototype engineering development
- 38258 Conducted first flight, prototype # 1 and continued flight test program
- 8806 Continued manufacturing of prototype # 2
- Total 248246

FY 1997 Planned Program:

- 29019 Continue digitization effort
- 203835 Continue Dem/Val prototype engineering development
- 40440 Continue flight test program for prototype #1
- 9915 Complete manufacturing of prototype #2
- 6981 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 290190

Project D327

Page 6 of 10 Pages

Exhibit R-2 (PE 0604223A)

661

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

D327

FY 1998 Planned Program:

- 23748 Continue digitization effort
- 158687 Continue Dem/Val prototype engineering development
- 39371 Conduct first flight of prototype #2 and continue flight test program for prototype #1
- 8299 Update prototypes #1 and #2
- 7371 Begin manufacturing Early Operational Capability (EOC) aircraft
- Total 237476

FY 1999 Planned Program:

- 33082 Continue digitization effort
- 183236 Continue Dem/Val prototype engineering development
- 58370 Continue flight test program for prototypes #1 and #2
- 8615 Continue to update prototypes #1 and #2
- 47517 Continue manufacturing Early Operational Capability (EOC) aircraft
- Total 330820

B. Project Change Summary

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY 1997 President's Budget	255106	253028	253127	348693
Appropriated Value	262268	290190		
Adjustments to Appropriated Value	-14022			
FY 1998 Pres Bud Request	248246	290190	237476	330820

Change Summary Explanation: Funding: FY98 (- 15651) and FY99 (-17873) change is primarily due to a realignment of funds between the Comanche air vehicle and the engine, and reductions for savings in matrix support. FY97 (+37162) Congressional increase.

C. Other Program Funding Summary

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Total</u>
APA									<u>Cost</u>
A08300 Comanche							104128	149249	Cont

Project D327

Page 7 of 10 Pages

Exhibit R-2 (PE 0604223A)

662

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604223A Comanche

PROJECT

D327

D. Schedule Profile

	FY 1996			FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1	2	3	4
Begin digitization effort	X											
Continue Dem/Val prototype engineering development	X											
Conduct first flight, prototype #1 and continue flight test program			X									
Continue manufacturing of prototype #2	X											
Continue digitization effort					X							
Continue Dem/Val prototype engineering development					X							
Continue flight test program for prototype #1					X							
Complete manufacturing of prototype #2								X				
Continue digitization effort									X			
Continue Dem/Val prototype engineering development									X			
Conduct first flight of prototype #2 and continue flight test program for prototype #1											X	
Update prototypes #1 and #2												
Begin manufacturing Early Operational Capability (EOC) aircraft										X		
Continue digitization effort											X	
Continue Dem/Val prototype engineering development											X	
Continue flight test program for prototypes #1 and #2											X	
Continue to update prototypes #1 and #2											X	
Continue manufacturing Early Operational Capability (EOC) aircraft											X	

Project D327

Page 8 of 10 Pages

Exhibit R-2 (PE 0604223A)

663

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

D327

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	223182	258742	215488	306699
Program Management Support	23111	18679	18080	18087
Government Furnished Personnel/Equipment/Facilities	1395	3393	1446	2717
Test & Evaluation	558	2395	2462	3317
SBIR/STTR		6981		
Total	248246	290190	237476	330820

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Product Development Organizations (includes contractor testing)

Boeing Sikorsky C/CPIF April 91

JPO A004

Product Develop-

(Other)

Other Completed

Contracts

SBIR/STTR

Support and Management Organizations

Rail C/FFP Sep 87

SysTeam C/FFP Oct 91

PATs contracts C/FFP

Other Contracts Agreement

PMO/Gov't MIPR

Agencies

Test and Evaluation Organizations

Gov't Agencies MIPR

Project Office

EAC

FY 1996

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FY 1999

FY 1999

FY 1999

FY 1999

FY 1999

FY 1999

FY 1999

FY 1999

Project D327

Page 9 of 10 Pages

Exhibit R-3 (PE 0604223A)

664

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604223A Comanche

PROJECT

D327

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total				Budget to Complete	Total Program
				FY 1996	FY 1996	FY 1997	FY 1998		
Government Furnished Property									
Contract									
Product Development Property: None									
Support and Management Property									
Other Gov't	MIPR			10190	1395	3393	0	0	Cont
Agencies									Cont
Test and Evaluation Property									
Other Gov't	MIPR						1446	2717	Cont
Agencies									Cont
Subtotal Product Development									
Subtotal Support and Management				2095246	223182	265723	215488	306699	Cont
Subtotal Test and Evaluation				135633	24506	22072	18080	18087	Cont
Total Project				7463	558	2395	3908	6034	Cont
				2238342	248246	290190	237476	330820	Cont

Project D327

Page 10 of 10 Pages

Exhibit R-3 (PE 0604223A)

665

Item 66

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	62250	73886	66212	51490	11499	10334	23712	31636	Continuing	Continuing
DL12 Signals Warfare Development	13360	16065	13874	7228	5239	5650	15583	17545	Continuing	Continuing
DL15 Army Reprogramming and Analysis Team (ARAT)	2830	3764	4024	3323	0	0	0	0	0	17670
DL16 TROJAN Development	517	1261	1278	1333	0	0	0	0	0	4389
DL18 SHORTSTOP Development	6800	9151	0	0	0	0	0	0	0	24475
D665 Aircraft Survivability Equipment Development	38743	43645	46870	37248	6144	4684	8129	14091	Continuing	Continuing
D2VT Suite of Integrated Infrared Countermeasures Operational Test (SIIRCM)	0	0	166	2358	116	0	0	0	0	2640

Mission Description and Budget Item Justification: This program element encompasses engineering and manufacturing development for tactical electronic warfare (EW), signals warfare (SW), aircraft survivability equipment (ASE), battlefield deception, rapid software reprogramming and protection of personnel and equipment from hostile artillery. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provide the Army with the capability to degrade or deny hostile forces the effective use of their communications, countermortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threat technical advancements. This program element satisfies requirements for brigade, division, corps and higher commanders to conduct electronic warfare to meet tactical and Special Electronic Mission Aircraft (SEMA) requirements, attach/scout, and assault/cargo mission requirements. Signals Warfare Development provides for development of multifunction ground based and airborne intelligence and electronic warfare systems. The High Value Asset Defense System will provide effective protection of personnel and equipment from electronically fused munitions. TROJAN developments will complete Proof-of-Principle R&D for specific TROJAN applications in advanced threat signals processing and prototype software upgrades; high frequency (HF) algorithms for compact antenna array technology (CAAT) configured into small aperture antenna arrays; search and acquisition capabilities for unattended signal collectors; and new digital intelligence collection, processing and dissemination technology. The ARAT Project will develop, test and equip an Army wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. The projects in this PE are in the engineering and manufacturing development phase of the acquisition cycle and therefore are correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	DL12 Signals Warfare Development	13360	16065	13874	7228	5239	5650	15583	17545	Continuing

A. Mission Description and Justification: Signals Warfare Development provides for a family of integrated ground-based and airborne intelligence and electronic warfare common sensor systems. The Ground Base Common Sensor (GBCS) is an intercept and emitter location system. It provides division commanders with the capability to search, intercept, listen to, precisely locate for hard-kill or order-of-battle resolution, or render ineffective through electronic attack, threat command and control and fire control communications nets. It also identifies and precisely locates threat countermortar and counterbattery ground surveillance radar emissions, and identifies enemy conventional and Low Probability of Intercept (LPI) communications and non-communications emitters and jam enemy conventional and LPI communications emitters. GBSCS is an evolutionary system which is intended to continually overmatch threat capabilities through a continuous modernization philosophy. Modular components, commercial standards, and open architecture features facilitate change in a cost effective manner of changing parts via P³ vice whole system replacement. This open architecture feature satisfies the Army requirement to conduct tactical ground Communications Intelligence, Electronic Intelligence, Electronic Support, and Electronic Attack against threat communications and non-communications signals; enhances the Commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defense centers. The GBSCS will be used in two platform configurations. The GBSCS-Light (GBSCS-L) will be deployed on a highly mobile multipurpose wheeled vehicle (HMMWV) in support of Light Divisions. The GBSCS-Heavy (GBSCS-H) will be deployed on a tracked vehicle in support of Armored and Mechanized Infantry Divisions. The third platform of the Intelligence and Electronic Warfare Common Sensor System is the Advanced QUICKFIX (AQF) which provides for a material change to the existing airborne QUICKFIX communications intercept, collection, processing, direction finding, and jamming system and will be deployed to Army Divisions and Armored Cavalry Regiments (ACR). Configured in a Blackhawk Helicopter (EH-60A), it provides the moving platform necessary to provide for location accuracies sufficient for "steel on target" requirements, as well as for extension of radio Line of Sight (LOS) against target emitters. This project provides for engineering and manufacturing development (EMD) and testing of Intelligence and Electronic Warfare Common Sensor (IEWCS) Subsystems and Systems leading to Milestone III and product improvement of systems after initial production. The Subsystems are:

a. The Tactical and Communication Jammer (TACJAM-A) will enhance the Division Commander's ability to outmaneuver and kill the enemy by isolating and suppressing enemy fire control and command and control (C²) nets at critical points in the battle; provide electromagnetic overwatch of the threat C² spectrum inclusive of both conventional and modern modulations (LPI); freeze the enemy in place by jamming C², and eliminate enemy counterfire by locating High Value Targets (HVTs) for targeting. TACJAM-A consists of state-of-the-art modular and scaleable Electronic Support Measures (ESM) and Electronic Countermeasures (ECM) subsystems configured for use on a variety of air and ground prime movers (tracked, wheeled and airborne).

b. The Communication High Accuracy Location System (CHALS-X) provides the targeting capability required to support the Division Commander's requirement to locate and kill the enemy by providing location of high value targets. Airborne systems mixed with ground based systems will be capable of precisely locating enemy weapon systems and units (regardless of whether the enemy uses conventional or modern radios) producing target locations sufficiently accurate for first round fire for effect by organic artillery.

c. The Common Modules ELINT Subsystem (CMES) provides search, intercept, direction finding (DF), precision location and analysis of the primary non-communication (radar) battlefield threat emitters. While operating in a fully automatic mode, it will enhance the Division Commander's ability to outmaneuver and kill the

Project DL12

Page 2 of 28 Pages

Exhibit R-2 (PE 0604270A)

667

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604270A Electronic Warfare (EW) Development

PROJECT

DL12

enemy by specifically identifying HVTs such as enemy countermortar, and counterbattery ground surveillance radar at critical points in the battle and will provide precise emitter locations with targeting accuracy.

The United States Marine Corps is utilizing the same subsystems as the GBCS and configuring them in a Light Armored Vehicle as a part of the Mobile Electronic Warfare Support System (MEWSS) improvement program.

This unclassified project is joint with the National Security Agency's Defense Cryptologic Program (DCP), Program Element 030885G, which provides a portion of the funds required for the development of the precision location subsystem and system integration of GBCS-L and GBCS-H.

Acquisition Strategy: GBCS provides the commanders of Divisions, Brigades and ACR with an organic capability to listen to, precisely locate for hard-kill or order-of-battle resolution, or render ineffective through electronic attack, threat command and control and fire control communications nets, and identify and precisely locate threat countermortar and counterbattery ground surveillance radar emissions, and other communications nets. The system is specifically designed to ensure transportability, prime mover maintainability, and over terrain mobility equal to that of the supported divisions, regiments, and brigades while exploiting or eliminating - at the commander's discretion - the latest, most modern type of hostile modulations and transmissions techniques at the key time and place on the battlefield. GBCS is an evolutionary system which is intended to continually overmatch threat capabilities through a continuous modernization philosophy. Modular components, commercial standards, and open architecture features facilitate change in a cost effective manner by enhancing software or changing parts via P³I vice whole system replacement. This open architecture feature satisfies the Army requirement to conduct tactical ground communications intelligence, electronic intelligence, electronic support, and electronic attack against threat communications and non-communications signals; enhances the commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defenses centers.

FY 1996 Accomplishments:

- 241 Completed TACJAM-A ESM Development
- 7401 Continued (GBCS/AQF) Integration effort
 - Fielded EMD Models of GBCS and AQF Systems to Task Force XXI
 - Improved GBCS/AQF by including other advanced communication modifications/techniques as well as advanced signal analysis and improved signal sorting parameters
 - Began integration of TACJAM-A ECM into AQF
- 1749 Conducted operation demonstration customer test/development test (OCDT) on GBCS
- 3044 High level software design and initiated hardware development
- 925 Provided contractor maintenance support for Task Force XXI
- Total 13360

Project DL12

Page 3 of 28 Pages

Exhibit R-2 (PE 0604270A)

668

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

FY 1997 Planned Program:

• 87	Conduct special in-process review (SIPR) on AQF ECM
• 4622	Continue GBSCS/AQF improvements to include advanced digital modulations and techniques, remote collection techniques, finish ECM subsystem integration into AQF and begin integration into GBSCS-L and GBSCS-H, other product improvements resulting from Task Force XXI
• 6900	GBSCS-L/AQF software fixes
• 1106	Conduct training and provide contractor depot repair in support of IOT&E for GBSCS-L
• 1072	Contractor maintenance support for Task Force XXI
• 1900	ADEXIAM incremental
• 378	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	16065

FY 1998 Planned Program:

• 2996	Begin integration of ECM subsystem into GBSCS-L and GBSCS-H
• 1367	Complete signal analyzer upgrade and provide for production line cutover
• 4289	Start GBSCS/AQF pre-planned product improvement (P3I); continued advanced digital modulations, reconfigurable tuner, co-channel analysis, analog-to-digital converter, improved signal analysis, enhanced sorting parameters capability and improve HF tuners
• 2945	OCDT for GBSCS-H and AQF
• 1629	Conduct training and provide contractor depot repair in support of IOT&E for GBSCS-H and AQF
• 318	Conduct Milestone III for GBSCS-H and AQF
• 186	Complete IOTE on GBSCS-L
• 144	Conduct Milestone III for GBSCS-L
Total	13874

FY 1999 Planned Program:

• 6694	Continue GBSCS/AQF P3I
• 245	Conduct testing on previously implemented improvements
• 289	Complete GBSCS/AQF development of advanced capabilities and remote collection
Total	7228

Project DL12

Page 4 of 28 Pages

Exhibit R-2 (PE 0604270A)

669

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

B. Project Change Summary

FY 1997 President's Budget Request

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request:

FY 1996

13692

13831

-471

13360

FY 1997

16414

16065

FY 1998

16223

FY 1999

9884

7228

Change Summary Explanation:

Funding: FY 1998/FY 1999: Funding reductions from President's Budget are the result of Army Science Board report (Reengineering the Institutional Army, the Acquisition Perspective) recommended reductions (FY 98 -2349/FY 99 -2656)

Schedule: IOT&E for GBCS-L rescheduled from 4QFY96 to 4QFY97 due to integration problems. IOT&E for AQF rescheduled from 4QFY97 to 3QFY98 due to subsystem availability.

C. Other Program Funding Summary

OPA (SSN BZ7326)

OPA (SSN BZ9753)

APA (SSN AB3000)

RDTE Budget Activity 7

DCP PE 030885G, GBCS

RDTE Budget Activity 7

DCP PE 030885G, CHALS-X

Total Cost

FY 1996

45470

0

37142

18949

FY 1997

47033

0

13899

19824

FY 1998

26817

0

38140

19324

FY 1999

37269

0

37301

19624

FY 2000

88615

6179

55833

19724

FY 2001

90635

12561

68509

20893

FY 2002

93674

13083

78011

20924

FY 2003

107640

21987

86141

21260

To

Compl

Cont'd

Cont'd

Cont'd

Cont'd

Total Cost

Cont'd

Cont'd

Cont'd

Cont'd

Cont'd

D. Schedule Profile

Acquisition Milestones

Award Limited Production Contract

Milestone III on GBCS-L

Milestone III on AQF

Milestone III on GBCS-H

Complete Development of Advanced

Capabilities

T&E Milestones

Begin IOTE on GBCS-L

1 2 3 4

FY 1996

2 3

3 4

FY 1997

2 3

3 4

FY 1998

2 3

3 4

FY 1999

2 3

3 4

FY 1999

2 3

3 4

X*

X

X

X

X

X

Project DL12

Page 5 of 28 Pages

Exhibit R-2 (PE 0604270A)

670

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete IOTE on GBCS-L																
Conduct IOTE on AQF																
Conduct IOTE on GBCS-H																
Contract Milestones																
Field RDT&E Model of GBCS-L																
SIPR - AQF ECM																
Task Force XXI																

X*

SIPR - AQF ECM

Task Force XXI

X*

X*

X

X

X

X

X

X

X

*Denotes completed milestone

Project DL12

Page 6 of 28 Pages

Exhibit R-2 (PE 0604270A)

671

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

DL12

	FY 1996	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown				
Primary Hardware Development	3504	2627	3750	2983
Software Development	3216	6641	4283	2216
Systems Engineering	421	1739	703	365
Integrated Logistics Support	841	1032	894	465
Quality Assurance; Reliability; Maintainability & Availability	672	825	715	371
Developmental Test & Evaluation	784	962	2824	433
Government Engineering Support	1658	713	355	199
Program Management Support	606	326	98	55
Program Management Personnel	1658	822	252	141
SBIR/STTR		378		
Total	13360	16065	13874	7228

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC**	Project Office EAC**	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	*Total Program
Product Development Organizations											
Sanders/AEL	C-CPIF	Jun 89	216686	216334	205051	5880	1900	985	0	0	213816
IBM/Loral	SS-CPFF	Jun 90	52997	52997	47623	300	0	0	0	0	47923
ESI	C-CPAF	Sep 91	189463	186424	103764	685	1000	0	0	0	105449
FMC	SS-CPFF	Sep 90	15913	15913	12377	1436	1900	700	500	0	16913
LMFS-O	C-FFP	Nov 95	94577	94577	0	887	6337	8974	6323	Cont'd	Cont'd
(GBCS/AQF)											
Loral-AD/EXJAM	SS-CPIF	Mar 96			0	0	1900	0	0	0	1900
Misc.					2638	250	0	10	3	Cont'd	Cont'd
SBIR/STTR					0	0	378	0	0	0	378
Support and Management Organizations											
Questech	FFP	May 95				630	625	80	15	Cont'd	Cont'd

Project DL12

Page 7 of 28 Pages

Exhibit R-3 (PE 0604270A)

672

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE	PROJECT
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development				February 1997	DL12
Contractor or	Contract	Method/Type	Award or	Performing	Project	Total	*Total
Government	Method/Type	or Funding	Obligation	Activity	Office	Prior to	Budget to
Performing	Vehicle	Vehicle	Date	EAC **	EAC **	FY 1996	Complete
Activity	Direct	Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
In-House	MIPR	Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
CECOM		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Ft Monmouth NJ		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Test and Evaluation Organizations		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
EPG/Ft. Hood	MIPR	Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Government Furnished Property		Method/Type	Award or	Performing	Project	Total	*Total
Contract		or Funding	Obligation	Activity	Office	Prior to	Budget to
Item		Vehicle	Date	EAC **	EAC **	FY 1996	Complete
Description		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Product Development Property		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
NOTE: TACJAM-A/CHALS-X/EFVS, Sanders-AEL/IBM-Loral/FMC, respectively, identified above as Product Development Organizations		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Support and Management Property: N/A		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Test and Evaluation Property: N/A		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Subtotal Product Development		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Subtotal Support and Management		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Subtotal Test and Evaluation		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
Total Project		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
*Total Program does not includes funding from other sources.		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd
**Project Office EAC includes Marine Corps and National Security Agency funds which are not included in the Total Program (Army budget).		Vehicle	Date	EAC **	EAC **	FY 1996	Cont'd

Project DL12

Page 8 of 28 Pages

Exhibit R-3 (PE 0604270A)

673

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development								DL15	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL15 Army Reprogramming and Analysis Team (ARAT)		2830	3764	4024	3323	0	0	0	0	0	17670

A. Mission Description and Justification: Army Reprogramming and Analysis Team (ARAT) for Target Sensing Systems (TSS) project will design, develop, implement, test, equip and institutionalize an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. ATSS are those tactical weapons and sensor systems which rely on embedded, well-defined target or emitter signature data for specific identification. Systems supported by this project include but are not limited to: radar warning receiver and jammer sub-systems of attack, scout, utility and SEMA aircraft; aircraft survivability equipment; automated intelligence collection systems and jammers; advanced threat sensors for air defense, artillery and missile applications, and use as vehicle /troop self-protection systems. The project focuses on advanced information management technologies to: automate the threat recognition process; evaluate the operational impact of threat changes on inventoried sensor; develop, test and evaluate software to counter the change; develop tactical loading devices for deploying or deployed forces; and institutionalize the infrastructure to accomplish these tasks as well as distribute/disseminate the new software.

Acquisition Strategy: The ARAT to TSS project will design, develop, implement, test, equip and institutionalize all Army-wide infrastructure capable of reprogramming electronic combat software embedded in offensive and defensive weapons systems. The program requirements for software engineering, development, support equipment engineering acquisition, operational training and test and evaluations support will be acquired by the use of time and material contracts. This strategy will further such major program events such as the test and evaluation of off-the-shelf and developmental loading devices, the completion of connectivity of a secure Wide Area Network with all reprogramming centers and the development of flagging models for specific electronic combat survivability systems.

FY 1996 Accomplishments:

- 1083 Tested and evaluated off-the-shelf and developmental memory loading devices for aviation electronic combat (AEC) equipment
- 425 Modified or developed database management tools for AEC equipment
- 500 Evaluated hardware/software and developed measurement and signature intelligence (MASINT) on-line database access capability
- 375 Upgraded ARAT communications systems
- 447 Expanded on the application of Electronic Intelligence (ELINT) flagging models for additional Mission Data Sets
- Total 2830

FY 1997 Planned Program:

- 1517 Modify or develop database management tools for ADA, IEW, Fire Support and Armor TSS
- 1120 Test and evaluate off-the-shelf and developmental loading devices for ADA, IEW, Fire Support and Armor TSS
- 375 Initiate study on the feasibility of electronic broadcast reprogramming

Project DL15

Page 9 of 28 Pages

Exhibit R-2 (PE 0604270A)

674

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL15

FY 1997 Planned Program: (continued)

- 380 Improve or modify ARAT flagging capability for ELINT systems
- 280 Enhance MASINT database on-line capability
- 92 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 3764

FY 1998 Planned Program:

- 975 Initiate integration of Electro-optic/Infrared (EO/IR) based systems into reprogramming infrastructure
- 427 Develop and design communications architecture paths to support CONUS and OCONUS field unit communications
- 1583 Begin to implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)
- 702 Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver
- 337 Development of Multi-Service Electronic Combat Secure Web Site.
- Total 4024

FY 1999 Planned Program:

- 828 Finalize implementation of support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)
- 749 Test and evaluate the communications architecture paths to support CONUS to OCONUS field unit communications
- 379 Finalize Flagging Model for the AN/APR-39A(V)2 Radar Warning Receiver
- 883 Begin Flagging Model for the Suite of Integrated RF Countermeasures (SIRFC)
- 484 Develop training materials for commanders staff & unit level personnel (Warfighters Handbook)
- Total 3323

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2903	3845	4331	3596
Appropriated Value	2933	3764		
Adjustments to Appropriated Value	-103			
FY 1998 Pres Bud Request	2830	3764	4024	3323

C. Other Program Funding Summary: Not applicable.

Project DL15

Page 10 of 28 Pages

Exhibit R-2 (PE 0604270A)

675

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

DL15

D. Schedule Profile

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Test and evaluate off-the-shelf and developmental loading devices for aviation combat equipment.		X*						
Modify or develop database management tools for aviation combat equipment.								
Initiate study on the feasibility of electronic broadcast reprogramming.								
Modify or develop database management tools for ADA, IEW, Fire Support and Armor TSS								
Test and evaluate off-the-shelf and developmental loading devices for ADA, IEW, Fire Support and Armor TSS								
Initiate study on the feasibility of electronic broadcast reprogramming								
Improve or modify ARAT flagging capability for ELINT systems								
Enhance MASINT database on-line capability								
Integrate Electro-optic based systems into reprogramming infrastructure.								
Design, develop and test communications architecture paths to support CONUS to OCONUS field unit communications.								
Begin to implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)								
Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver								

Project DL15

Page 11 of 28 Pages

Exhibit R-2 (PE 0604270A)

676

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

DL15

D. Schedule Profile

9661 A.F.

1661 A.F.

8661 A.H

FY 1999

Development of Multi-Service Electronic
Combat Secure Web Site.
Finalize implementation of support plans
for PM, Aviation Electronic Combat
(SIRFC to AMPS interface)
Test and evaluate the communications
architecture paths to support CONUS to
OCONUS field unit communications
Finalize Flagging Model for the AN/APR-
39A(V)2 Radar Warning Receiver
Begin Flagging Model for the Suite of
Integrated RF Countermeasures (SIRFC)
Develop Training Materials for
Commanders Staff & Unit level personnel
(Warfighters Handbook)

*Denotes a completed effort

Project DL15

Page 12 of 28 Pages

Exhibit R-2 (PE 0604270A)

677

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		0604270A Electronic Warfare (EW) Development		
5 - Engineering and Manufacturing Development			DL15		
	FY 1996	FY 1997	FY 1998	FY 1999	
A. Project Cost Breakdown					
Government Engineering Support	425	510	511	524	
Contract Engineering Support	1570	1837	1488	949	
Development Support Equipment Acquisition	90	575	600	600	
Operational Training	150	150	200	150	
PM Support	300	300	700	700	
Test and Evaluation	200	200	300	200	
Travel	95	100	225	200	
SBIR/STTR		92			
Total	2830	3764	4024	3323	
B. Budget Acquisition History and Planning Information:	Not applicable				

Project DL15

Page 13 of 28 Pages

Exhibit R-3 (PE 0604270A)

678

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	PROJECT
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development										February 1997	DL16
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
DL16	TROJAN Development	517	1261	1278	1333	0	0	0	0	0	4389		

A. Mission Description and Budget Item Justification: This project is a Tactical Intelligence and Related Activities (TIARA) program. A key factor in modern warfare is the ability to collect, process and use information about an adversary while preventing him from obtaining similar information. TROJAN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, facsimile, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. This project engineers, tests and evaluates new digital intelligence collection, processing and dissemination technology using the fielded TROJAN systems, prior to the acquisition of those technologies. The process that will enable the United States to win the battlefield information war is referred to as digitization. This capability will allow us to process and disseminate real-time intelligence data from various sources; it forms the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative the TROJAN system keep pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threats.

Acquisition Strategy: Competitive contract award utilizing firm fixed price and best value selection procedures for engineering and manufacturing development.

FY 1996 Accomplishments:

- 123 Conducted operational test, evaluation and engineering of video compression/processing technologies to the TROJAN intelligence processing workstation
- 394 Performed operational evaluation of specific TROJAN applications for non-standard modulations using digital signal processing technologies
- Total 517

FY 1997 Planned Program:

- 375 Continue operational evaluation on specific TROJAN applications for non-standard modulations techniques using digital processing technologies (1Q97-4Q97)
- 328 Complete operational test, evaluation and engineering of video compression/processing technologies on fielded TROJAN systems
- 527 Acquire previously developed specialized software for classified pre-processing and enhanced signal processing algorithms
- 31 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 1261

Project DL16

Page 14 of 28 Pages

Exhibit R-2 (PE 0604270A)

679

Item 67

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604270A Electronic Warfare (EW) Development

DL16

•	Operational test and evaluation of previously developed specialized software and enhanced signal processing algorithms	267
•	Implement and test Area Common User System (ACUS) Interfaces technology for the TROJAN intelligence network	500
•	Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence collection network throughput	511
	Total	1278

•	512	Continue operational assessment of multi-bandwidth compression algorithm throughput	TROJAN intelligence collection network
•	321	Apply IEW dissemination applications based on Task Force XXI lessons learned	
•	500	Apply tactical transcription functionality at the RSOCs to support tactical to national partnership	
	1333	Total	

FY 1997 President's Budget	531	1288	1363	1430
Appropriated Value	536	1261		
Adjustments to Appropriated Value	-19			
FY 1998 Pres Bud Request	517	1261	1278	1333

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Exhibit R-2 (PE 0604270A)

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1997		PROJECT	
BUDGET ACTIVITY				PE NUMBER AND TITLE										PROJECT	
5 - Engineering and Manufacturing Development				0604270A Electronic Warfare (EW) Development										DL16	
FY 1996				FY 1997				FY 1998				FY 1999			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
D. Schedule Profile															
Acquisition Milestones															
Contract Award for enhanced Sig Proc Algorithms															
Contract Award for Area Common User System (ACUS) Interfaces for TROJAN Intel Network															
Contract Award for Multi-bandwidth compression algorithms															
Contract Award for dissemination applications															
Contract Award for Transcription Functionality at the RSOCs															
Engineering Milestones															
Prototype insertion-video compression/processing															
Spec software for signal processing algorithms															
Enhanced signal processing algorithms															
Area Common User System (ACUS) interface for TROJAN Intel Net															
Multi-bandwidth compression algorithms															
Dissemination applications															
Transcription functionality at RSOCs															
*Denotes a completed effort															

Project DL16

Page 16 of 28 Pages

Exhibit R-2 (PE 0604270A)

Project DL16

Page 16 of 28 Pages

Exhibit R-2 (PE 0604270A)

681

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604270A Electronic Warfare (EW) Development		
5 - Engineering and Manufacturing Development				DL16		
A. Project Cost Breakdown						
Hardware Development		FY 1996	FY 1997	FY 1998	FY 1999	
		312	753	760	792	
Software Development		205	477	518	541	
SBIR/STTR			31			
Total		517	1261	1278	1333	
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract					
Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity			
			EAC			
Product Development Organizations: None						
Support and Management Organizations:						
Misc.	C/CPFF	Mar 96	517			
	MIPR	Jan 97	1261			
	MIPR	Jan 98	1278			
	MIPR	Jan 99	1333			
SBIR/STTR				31		31
Test and Evaluation Organizations: None						
Government Furnished Property: None						
Subtotal Product Development						
Subtotal Support and Management			517	1261	1278	4389
Subtotal Test and Evaluation			517	1261	1278	4389
Total Project						

Project DL16

Page 17 of 28 Pages

Exhibit R-3 (PE 0604270A)

682

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL18

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL18 SHORTSTOP Development	6800	9151	0	0	0	0	0	0	0	24475

A. Mission Description and Budget Item Justification SHORTSTOP development is the continuation of the SHORTSTOP program which was initiated as a Quick Reaction Program (QRP) to a CENTCOM Statement of Need (SON) developed in the early part of Operation Desert Shield/Desert Storm. Thirty six Limited Procurement Urgent units (AN/VLQ-9) were procured and fourteen have been upgraded to a multi-band configuration (AN/VLQ-10). Sixteen AN/VLQ-9s and ten AN/VLQ-10s are currently deployed in Bosnia in support of Operation Joint Endeavor. The SHORTSTOP Operational Requirements Document, approved Apr 94, calls for a system with a lightweight autonomous configuration which shall be quickly and easily deployed via vehicles or manpack. In order to maximize tactical utility, it further requires that the set be capable of operation from either a battery or suitable external power source. The current EMD program for the SHORTSTOP Electronic Protection System will provide a lightweight, fully integrated Radio Frequency Countermeasure system to provide protection for personnel and other high value assets against proximity fused munitions. There will be three configurations of the SHORTSTOP Electronic Protection System: a manpack system, a stand alone system, and a vehicle mounted system. SHORTSTOP will be used by Infantry, Engineering, Armored, Field Artillery, and Intelligence units to enhance survivability.

Acquisition Strategy: A contract was awarded in July 1994 on a competitive basis for the development of a lightweight autonomous configuration of the SHORTSTOP Electronic Protection System.

FY 1996 Accomplishments:

- 4369 Completed hardware design
- 1336 Completed software design and began integration with hardware
- 1095 Began fabrication of nine (9) prototypes
- Total 6800

FY 1997 Planned Program:

- 6032 Complete fabrication/contractor qualification testing of nine (9) prototypes
- 500 Award T&M contract for support of Government Technical and Operation Test
- 485 Design/fabricate Fuze Immulator to support testing
- 435 Design/develop 1553 instrumentation data interface to support live fire test
- 95 Develop installation kit for vehicle mount version
- 1380 Conduct technical and operational test
- 224 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 9151

Project DL18

Page 18 of 28 Pages

Exhibit R-2 (PE 0604270A)

683

Item 67

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL18

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

C. Other Program Funding Summary

Other Procurement, Army

SSN: VA8000 - SHORTSTOP

D. Schedule Profile

Complete hardware design

Complete software design and begin

integration with hardware

Begin fabrication of nine (9) prototypes

Complete fabrication of nine (9)

prototypes

Conduct contractor qualification testing

Award T&M support contract

Design/Fabricate Fuze Immobilizer

Design/develop 1553 instrumentation data

interface

Develon installation kits

Develop Installation Kits Deliver nine (9) EMD prototypes

Deliver nine (9) EMDs per Conduct Technical Test

Conduct Operational Test

*Denotes completed milestone

Project DL18

Page 19 of 28 Pages

Exhibit R-2 (PE 0604270A)

684

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL18

A. Project Cost Breakdown

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Primary Hardware Development	5626	4962		
Test and Evaluation		2875		
Government Engineering Support	735	731		
Program Management Support	439	359		
SBIR/STTR		224		
Total	6800	9151		

B. Budget Acquisition History and Planning Information: Not Applicable

Project DL18

Page 20 of 28 Pages

Exhibit R-3 (PE 0604270A)

685

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

D665

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D665 Aircraft Survivability Equipment Development	38743	43645	46870	37248	6144	4684	8129	14091	Continuing	Continuing

A. Mission Description and Justification: Aircraft Survivability Equipment Development provides for the development and system integration of Aircraft Survivability Equipment (ASE) to achieve survivability, reduce vulnerability, and enhance combat effectiveness required to fulfill special electronic mission aircraft (SEMA), attack/scout, and assault/cargo mission requirements. Equipment developed will increase combat effectiveness and potential for mission accomplishment by reducing or eliminating the ability of threat air defense systems to detect, hit, damage or destroy Army aircraft. Developments respond to the approved requirements documents, test and type classification for production and fielding of ASE systems to address infrared, radar, laser and optical/electro-optical directed air defense threats. Efforts in development include new or upgraded systems to counter monopulse, millimeter wave, frequency agile, pulse doppler and continuous wave radars, passive infrared missile seekers and laser directed weapon systems. Continual adjustments are made to this program to meet the changing and evolutionary nature of technology and threat. This program has joint service applications that are coordinated through the Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS), as well as NATO applications coordinated through DoD. This project also provides the technical base for electronic warfare equipment for Comanche and Special Operations Aircraft. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition into the Engineering and Manufacturing Development (EMD) phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: Project is comprised of multiple programs which have been competitively awarded.

FY 1996 Accomplishments:

- 15950 Continued EMD of Suite of Integrated Infrared Countermeasure (SIIRCM). New nomenclature assigned - formerly ATIRCM/CMWS.
- 3246 Continued EMD of Advanced Infrared Countermeasure Munitions (AIRCMM)
- 15704 Continued EMD of the AN/ALQ-211 Suite of Integrated Radio Frequency Countermeasures (SIRFC). New nomenclature assigned - formerly ATRJ
- 1171 Continued development of Advanced Visual-Electro-Optical Signature Suppression and Analysis (AVESSA)
- 250 Continued integration efforts of ASE systems
- 2422 Continued in-house and program management administration
- Total 38743

FY 1997 Planned Program:

- 19431 Continue EMD of SIIRCM
- 2530 Continue EMD of AIRCMM
- 16228 Continue EMD of SIRFC
- 1139 Continue development of AVESSA

Project D665

Page 21 of 28 Pages

Exhibit R-2 (PE 0604270A)

686

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D665

FY 1997 Planned Program: (continued)

- 100 Complete integration efforts of ASE systems
- 3226 Continue in-house and program management administration
- 991 Small Business Innovative Research/Small Business Technical Transfer (SBIR/STTR)
- Total 43645

FY 1998 Planned Program:

- 28968 Continue EMD of SIIRCM
- 1897 Continue EMD of the AIRCMM
- 11964 Continue EMD of SIRFC
- 800 Continue development of AVESSA
- 3241 Continue in-house and program management administration
- Total 46870

FY 1999 Planned Program:

- 27859 Continue EMD of SIIRCM
- 1250 Complete EMD of the AIRCMM
- 4000 Complete EMD of the SIRFC
- 554 Complete development of AVESSA
- 3585 Continue in-house and program management administration
- Total 37248

B. Project Change Summary

- FY 1997 President's Budget
- Appropriated Value
- Adjustments to Appropriated Value
- FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
38828	38579	34606	34542
39219	43645		
-476			
38743	43645	46870	37248

Change Summary Explanation: Funding: +12264 of ASE APA, BA4 AZ3504 was converted to RDT&E in FY98; +2706 of ASE APA, BA4 AZ3504 was converted to RDT&E in FY99.

Project D665

Page 22 of 28 Pages

Exhibit R-2 (PE 0604270A)

687

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1997		PROJECT							
BUDGET ACTIVITY										PE NUMBER AND TITLE											
5 - Engineering and Manufacturing Development										0604270A Electronic Warfare (EW) Development						D665					
C. Other Program Funding Summary																					
APA, BA 4 AZ3504 ASE										FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total		
										50109	436	905	34412	46203	41601	100667	104090	Compl	Cost		
APA, BA 2 AA0720 ASE Modifications										12915	25777	4578	3922	11982	22592	17975	15351	Cont	Cont		
D. Schedule Profile										FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999			
Continue EMD of SIIRCM										1	2	3	4	1	2	3	4	1	2	3	4
Continue EMD of AIRCMM										X											
Continue EMD of SIRFC										X											
Continue dev of AVESSA										X											
Continue EMD of SIIRCM										X											
Continue EMD of AIRCMM										X											
Continue EMD contract of SIRFC										X											
Continue dev of AVESSA										X											
Continue EMD of SIIRCM																					
Continue EMD of AIRCMM																					
Continue EMD of SIRFC																					
Continue EMD of AVESSA																					
Continue EMD of SIIRCM																					
Complete EMD of AIRCMM																					
Complete EMD of SIRFC																					
Complete development of AVESSA																					

Project D665

Page 23 of 28 Pages

Exhibit R-2 (PE 0604270A)

688

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D665

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
R&D Contracts	32091	33534	31209	18156
Test and Evaluation	432	1724	8557	11536
Government Engineering Support	1177	1124	704	549
Program Management Engineering Support	5043	6272	6400	7007
SBIR/STTR		991		
Total	38743	43645	46870	37248

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contract

Contractor or Method/Type Award or Performing Total

Government or Funding Vehicle Date Obligation Activity EAC

Activity Prior to FY 1996 FY 1996 FY 1997 FY 1998 FY 1999 Budget to Total

Product Development Organizations: Note: Miscellaneous includes funding to various activities (ATCOM, St. Louis, MO/CECOM, Fort Monmouth, NJ) for ASE programs

Thiokol C/CPIF Sep 95 6740 6740 1000 2300 1710 1070 660 0 6740

(AIRCMM)

ITT Corp (SIRFC) C/CPAF Jul 94 55756 55756 19450 15018 14700 5337 1140 111 55756

Sanders(ATIRCM) C/CPAF Sep 95 57910 57910 2282 12414 10981 19879 12218 136 57910

Misc. Contracts MIPR 1099 1177 6143 2359 4923 4138 Cont Cont

Support and Management Organizations : Note: Miscellaneous includes funding to various activities (ATCOM, St. Louis, MO/CECOM, Fort Monmouth, NJ) for ASE programs

Support Contracts C/FFP Nov 94 562 545 640 515 515 Cont Cont

Misc. MIPR 6522 4498 5632 5885 6492 Cont Cont

Test and Evaluation Organizations: Note: Miscellaneous includes funding to various activities for ASE programs.

Misc. MIPR 853 432 1411 1525 254 Cont Cont

TECOM MIPR 313 3963 8446 0 11515

EPG MIPR 991 2836 7112

SBIR/STTR

Government Furnished Property: None

Exhibit R-3 (PE 0604270A)

Page 24 of 28 Pages

Item 67

UNCLASSIFIED

689

Project D665

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604270A Electronic Warfare (EW) Development

D665

	Total Prior to FY1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	30811	33268	34658	31913	18705	Cont	Cont
Subtotal Support and Management	7084	5043	6272	6400	7007	Cont	Cont
Subtotal Test and Evaluation	853	432	1724	8557	11536	Cont	Cont
SBIR/STTR			991			0	991
Total Project	38748	38743	43645	46870	37248	Cont	Cont

Page 25 of 28 Pages

Exhibit R-3 (PE 0604270A)

Item 67

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D2VT

COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2VT	Suite of Integrated Infrared Countermeasures Operational Test (SIIRCM)	0	0	166	2358	116	0	0	0	0	2640

A. Mission Description and Justification: This project supports the operational test for the Suite of Integrated Infrared Countermeasures (SIIRCM) and is new start in FY 1998. This project will provide active and passive Infrared Countermeasure (IRCM) protection against infrared guided weapons. The system is designed to meet operational requirements for a modular IRCM system capable of providing awareness and self protection jamming countermeasures. The system is applicable to the AH-64, MH-47E, MH-60K, RC-12K, EH-60, UH-60, and CH-47D aircraft. The program has been designated a Tri-Service program, with application to the Air Force and Navy aircraft.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

- 166 Commence SIIRCM Operational Test Support

Total 166

FY 1999 Planned Program:

- 2358 Continue SIIRCM Operational Test Support

Total 2358

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
0	0	0	0
0			
0			
0	0	166	2358

Charge Summary Explanation: Funding: Project initiated in FY 1998 to support SIIRCM operational test. (FY 98 +166; FY99 +2358)

Project D2VT

Page 26 of 28 Pages

Exhibit R-2 (PE 0604270A)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

D2VT

C. Other Program Funding Summary

APA, BA 4 AZ3507 ASE (ATIRCM)

APA, BA 2 AA0720 ASE Modifications*
(ATIRCM)

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

To

Total

Cost

Cont

Cont

Cont

Cont

*Represents only part of the funding in this SSN.

D. Schedule Profile

Initiate SIIRCM Test Support

Continue SIIRCM Test Support

1
FY 1996
2 3

4 1

FY 1997
2 3

4 1

FY 1998
2 3

4 1

FY 1999
2 3

4

X

Project D2VT

Page 27 of 28 Pages

Exhibit R-2 (PE 0604270A)

692

Item 67

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D2VT

A. Project Cost Breakdown

Test and Evaluation

Total

FY 1996

FY 1997

FY 1998

FY 1999

166

2358

166

2358

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Product Development Organizations: None

Support and Management Organizations: None

Test and Evaluation Organizations:

OPTEC

166

2358

116

2640

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

166

2358

116

2640

166

2358

116

2640

Project D2VT

Page 28 of 28 Pages

Exhibit R-3 (PE 0604270A)

693

Item 67

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604321A All Source Analysis System (TIARA)									
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	49912	39308	24045	26228	22695	31632	30880	30118	Continuing	Continuing	
DB19 ASAS Evolutionary Acquisition	48496	35660	21598	23813	22695	31632	30880	30118	Continuing	Continuing	
D2FT ASAS Operational Test	1416	3648	2447	2415	0	0	0	0	Continuing	Continuing	

Mission Description and Budget Item Justification: This program element funds the development of the All Source Analysis System (ASAS) Evolutionary Acquisition (EA) system and its operational testing. ASAS is the automated support system for the intelligence and electronic warfare (IEW) functional area of the Army Battle Command System (ABCS). It is a tactically deployable Automated Data Processing (ADP) system designed to support management of IEW operations and target development in battalions, brigades, armored cavalry regiments (ACR), separate brigades, divisions, corps, and echelons above corps (EAC). The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604321A All Source Analysis System (TIARA)

PROJECT

DB19

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	48496	35660	21598	23813	22695	31632	30880	30118	Continuing	Continuing

DB19 ASAS Evolutionary Acquisition

A. Mission Description and Justification: Project DB19 - ASAS Evolutionary Acquisition: This project funds the development of the Army's only tactical intelligence fusion project, the ASAS Block II Evolutionary Acquisition, within the Intelligence Fusion Project Office. The successful execution of military operations requires a flexible and modular intelligence and targeting system that will provide tactical commanders a common view of the battlefield and a means for gaining a timely and comprehensive understanding of enemy force deployments, capabilities, and potential courses of action. The ASAS is a ground based, mobile, command and control, intelligence processing system. The ASAS system provides automated support to the combat commander in the areas of intelligence and collection management, all-source target and situation analysis, single- and multi-source processing, intelligence reporting, electronic warfare, and operational security as well as automation support to the battlefield commander's command and control.

Acquisition Strategy: The ASAS Block II development program will build upon and expand the capabilities and functionalities developed and produced in the ASAS Block I System including conversion to the Army Tactical Command and Control System (ATCCS) Common Hardware/Software Open architecture and the OSD directed Common Operating Environment (COE) and Modernized Integrated Database (MIDB). Additional software capabilities include enhanced intelligence and command and control functionality, jump and degraded mode operations, enhanced communications, and improved reliability and supportability. ASAS Block II strategy maximizes the use of Government Furnished Equipment (GFE), government and commercial Non-Developmental Item (NDI) software, reuse of proven Office of Secretary of Defense (OSD) and ATCCS Command, Control, Communications and Intelligence (C3I) software, multiple prototype deliveries and continuous user test and evaluation opportunities. This strategy provides early user capabilities and streamlines acquisition. Building upon experience and feedback gained from the fielded ASAS and other tactical fusion prototypes, ASAS Block II will undergo Army Systems Acquisition Review Council (ASARC) Milestone III review in FY 99.

In March 1994, the Army was directed to accelerate fielding the ASAS capability across the force (including all Military Intelligence reserve units and National Guard brigades) by FY99. This ASAS-Extended program accomplishes this through: reuse of proven Block I software; leveraging the traditional acquisition successes of Block I; use of relatively low cost NDI equipment; and tailoring the existing training and maintenance support structure. The Army's intent is to keep fielded ASAS technology as current as possible by initiating value engineering and technology insertion to the fielded ASAS, and by packaging some of the ASAS Block II software drops into capability packages and inserting them into the fielded ASAS. These capability packages will be used with all of the fielded ASAS systems and modules. ASAS Block II will be fielded to Army active and reserve armored cavalry regiments, separate brigades, divisions, corps, and echelons-above corps. Brigades and Battalions will receive Collateral Remote Workstations.

Project DB19

Page 2 of 9 Pages

Exhibit R-2 (PE 0604321A)

695

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

DB19

FY 1996 Accomplishments:

- 43281 Continued ASAS Block II Evolutionary E&MD Capability Packages
 - Developed and integrated ASAS Common Applications
 - Developed and integrated Joint Collection Management Tools
 - Incorporated DOD directed Common Operating Environment (COE)
 - Add MIDB Capability
 - Developed Remote Workstation-Collateral for Task Force XXI
- 2343 Conducted Development/Operational/Assessment Testing
- 2872 Procured and provided GFE for Product Development & Test
- Total 48496

FY 1997 Planned Program:

- 31253 Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages
 - Implement COE-Compliant System Services and Common Applications
 - Complete Unified Database Schema
 - Develop Operational Diagnostic Capability
 - Rehost and improve All Source intelligence functionality from Blk I to Blk II
 - Enhance RWS to meet evolving DIV XXI capabilities
- 3572 Conduct Development/Operational/Assessment Testing
- 835 Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)
- Total 35660

FY 1998 Planned Program:

- 19213 Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages
 - Implement COE-Compliant System Services and Common Applications
 - Develop, Integrate and Test CP3 All Source Comms Module
 - Develop Operational Diagnostic Capability
 - Complete MIDB Effort
 - Integrate and Test CP4 (enhanced comms functionality; jump/degraded mode ops)
 - Rehost and improve All Source intelligence functionality from Blk I to Blk II
 - Enhance RWS to meet evolving EXFOR XXI capabilities
- 2385 Conduct Development/Operational/Assessment Testing
- Total 21598

Project DB19

Page 3 of 9 Pages

Exhibit R-2 (PE 0604321A)

696

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

DB19

FY 1999 Planned Program:

- 21378 Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages

- Integrate and Test CP4 (enhanced comms functionality; jump/degraded mode ops)

- Rehost and improve All Source intel functionality from Blk I to Blk II

- Enhance RWS to meet evolving EXFOR XXI capabilities

- Level 5/6 COE migration and hardening

- Develop objective target analysis capability

- Interface initial CI/HUMINT capability into ACE

- 2435 Complete CP4 Testing (PQT) including:

- Block II Operational Test

- CP4 Material Release

- Block II Milestone III and Block III Milestone II

Total 23813

B. Project Change Summary

FY1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY1998 Pres Bud Request

FY 1996

49716

50218

-1722

48496

FY 1997

32433

35660

35660

FY 1998

21666

21598

FY 1999

23918

23813

C. Other Program Funding Summary

OPA (K28801) ASAS Modules

Spares (BS9704)

FY 1996

10277

182

FY 1997

12282

0

FY 1998

7772

0

FY 1999

25256

0

FY 2000

57216

1868

FY 2001

65847

5561

FY 2002

59056

8893

FY 2003

49482

10207

To

Compl

Cont

Cont

Total

Cost

Cont

Cont

D. Schedule Profile

Phase 2 (Remote Workstation
Functionality) Prototype Delivery

ASAS-Extended Unit Sets

Block II Unit Sets

FY 1996

1 2

3

X*

X*

X*

FY 1997

1 2

3

X

X

X

FY 1998

1 2

3

4

X

X

FY 1999

1 2

3

4

X

X

FY 1999

1 2

3

4

X

X

*Initial software drop delivered

Project DB19

Page 4 of 9 Pages

Exhibit R-2 (PE 0604321A)

697

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

DB19

Government Furnished Property										
Contract										
Item	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Description										
Product Development Property										
CHS II	MIPR			1587	1100	0	359	397	0	3443
Support and Management Property: None										
Test and Evaluation Property										
Test sets CHS II										
				0	2872	0	758	836	0	4466
Subtotal Product Development										
				42876	39405	31660	17640	19077		150658
Subtotal Support and Management										
					6219	4000	3200	3900		17319
Subtotal Test and Evaluation										
					2872		758	836		4466
Total Project										
				42876	48496	35660	21598	23813		172443

Project DB19

Page 6 of 9 Pages

Exhibit R-3 (PE 0604321A)

699

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604321A All Source Analysis System (TIARA)								D2FT	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2FT	ASAS Operational Test	1416	3648	2447	2415	0	0	0	0	Continuing	Continuing
<p>A. Mission Description and Justification: Project D2FT - ASAS Test and Evaluation: This project finances the direct costs of planning and conducting testing and evaluation of the ASAS by the Operational Test and Evaluation Command (OPTEC). ASAS is an Acquisition Category (ACAT) I system with several dedicated iterations of Test and Evaluation (Technical and Operational) between FY 95 and FY 99. Testing and evaluations are conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. As necessary, OPTEC provides Army leadership with an evaluation of effectiveness and suitability of the system. Project D2FT is restructured from PE 0605712A. TECOM provides the Army leadership with testing of the ASAS, and is not a new start.</p> <p>Acquisition Strategy: Not applicable, see B19 above.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 1416 Conducted ASAS Block II Technical and Operational Testing and Evaluation <p>Total 1416</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 3559 Conduct ASAS Block II Technical and Operational Testing and Evaluation • 89 Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR) <p>Total 3648</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 2447 ACE Characterization Test and Evaluation <p>Total 2447</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2415 Phase IV PPQT <p>Total 2415</p>											

Project D2FT

Page 7 of 9 Pages

Exhibit R-2 (PE 0604321A)

700

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

PROJECT

D2FT

B. Project Change Summary

FY1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY1998 Pres Bud Request

FY 1996

1452

1467

-51

1416

FY 1997

3767

3648

FY 1998

2515

FY 1999

2514

2415

C. Other Program Funding Summary: Not Applicable**D. Schedule Profile**

FY 1996

1

2

3

4

1

FY 1997

2

3

4

1

FY 1998

2

3

FY 1999

2

3

4

ASAS Testing

- CP-Single Source

- CP-Remote Workstation

- CP-ACE

- CP-Comms

X

X

X

X

X

X

X

X

Project D2FT

Page 8 of 9 Pages

Exhibit R-2 (PE 0604321A)

701

Item 68

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604321A All Source Analysis System (TIARA)

D2FT

Exhibit R-3 (PE 0604321A)

Item 68

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604325A Follow-On To TOW

PROJECT

DE18

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE18 Follow-On to TOW	944	5479	13949	50884	71935	63147	73127	72503	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides for Engineering and Manufacturing Development for Follow-On To TOW (FOTT), a vehicle mounted, crew served Heavy Anti-Tank Missile System which will replace/supplement the TOW missile family. It will be integrated onto and fired from the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) with Improved Target Acquisition System (ITAS) and on the Bradley Fighting Vehicle (BFV) with Improved Bradley Acquisition Sub-System (IBAS) platforms. The FOTT will be capable of operating out to the maximum range required in the FOTT Operational Requirements Document (ORD) and will perform under day/night adverse weather conditions and obscuration. The FOTT will be countermeasures hardened and will increase crew survivability. Projects within this element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in budget activity 5.

Acquisition Strategy: The FOTT program will provide a systems approach by leveraging existing missile technologies. This next-generation missile will be compatible with both current and emerging TOW missile platforms. The EMD contract will be competitively awarded. EMD activities will include both missile design and platform integration.

FY 1996 Accomplishments:

- 944 EMD Preparation: Initiated Program Milestone II Documentation; Prepared Draft Request for Proposal; and Conducted System and Technical Analysis.

Total

944

FY 1997 Planned Program:

- 1045 Continue EMD Preparation: Develop Milestone II Documentation, System Specification and Final Request for Proposal.
- 4300 Support Contractor Pre-EMD Risk Reduction Tests: Provide Range Support, Range Instrumentation Suite, Range Facility Support, Range Target Sets, Range Test Management, Execution and Data Reduction, TOW Platform Shipment, Integration and Refurbishment.
- 134 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total

5479

FY 1998 Planned Program:

- 1696 Release EMD RFP; Conduct Source Selection; Complete Milestone II; and Award EMD Contract.
- 1097 Pre-CDR Component Hardware Analysis and Procurement of Component Hardware to Support Pre-CDR Tests.
- 9685 Initiate Component Design and System Engineering Analysis for Preliminary Design Review.

Project DE18

Page 1 of 3 Pages

Exhibit R-2 (PE 0604325A)

703

Item 69

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

FY 1998 Planned Program: (continued)

- 598 Prepare for Early User Assessment.
- 873 Procure Open System Integration and Simulation Laboratory (SIL) Hardware and Software.

Total	13949
-------	-------

FY 1999 Planned Program:

- 1493 Conduct Early User Assessment and Post Assessment Analysis to support PDR.
- 12764 Conduct Component Design and System Engineering Analysis for PDR; Conduct PDR.
- 18138 Initiate Procurement of Hardware for Pre-Production Test.
- 5910 Conduct Pre-CDR Tests and Update FOTT Systems Simulations associated with HMM and SIL.

12579 Continue System Engineering Analysis for Critical Design Review.
and SLE.

Total	50884
-------	-------

B. Project Change Summary

**FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated
FY 1998 Pres Bud Request**

Change Summary Explanation: FY1998/FY1999 Funding Adjustments (FY 98 -1448/FY 99 +1497) for higher priority requirements.

C. Other Program Funding Summary

Missile Procurement, Army
TOW 2 C59300
FOUO H04500

D. Schedule Profile

Release RFP
Complete Source Selection
Award EMD Contract
Preliminary Design Review

Project DE18

Page 2 of 3 Pages

Exhibit R-2 (PE 0604325A)

Item 69

704

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604325A Follow-On To TOW

DE18

	FY 1996	FY 1997	FY 1998	FY 1999	FY 1996	FY 1997	FY 1998	FY 1999	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
A. Project Cost Breakdown														
Primary Hardware Development			11655	45413										
Program Management Support	894	1045	1696	1986										
Developmental Test and Evaluation	50	4300	598	3485										
SBIR/STTR		134												
Total	944	5479	13949	50884										
B. Budget Acquisition History and Planning Information														
Performing Organizations														
Contract														
Government														
Performing														
Activity														
Method/Type														
Award or														
Obligation														
Date														
Performing														
Activity														
EAC														
Product Development Organizations														
Prime														
TBD														
Support and Management Organizations														
PM CCAWS,														
PO														
RSA, AL														
MICOM, RSA, AL														
PO														
Miscellaneous														
PO														
Test and Evaluation Organizations														
TECOM, APG,														
PO														
MD														
SBIR/STTR														
Government Furnished Property: None														
Subtotal Product Development														
Subtotal Support and Management														
Subtotal Test and Evaluation														
Total Project														

Project DE18

Page 3 of 3 Pages

Exhibit R-3 (PE 0604325A)

705

Item 69

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604604A Medium Tactical Vehicles										February 1997		DH07	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost				
DH07	Family of Medium Tactical Vehicles (FMTV)	2923	5874	3729	0	0	1613	0	0	Continuing	Continuing				

A. Mission Description and Budget Item Justification: This program element (PE) supports modernization of the Army's medium truck fleet. The Family of Medium Tactical Vehicles (FMTV) will replace aging M44 Series 2 1/2 ton trucks, M39 and M809 Series 5 ton trucks which are beyond their average useful life of 20-22 years. FMTV will also provide a follow-on to the current M939/A2 Series 5 ton truck. Body styles currently under development under Project DH07 were deferred from the first five year multi-year contract due to budget constraints. Bringing these vehicles on line as soon as possible supports the pure fleet of FMTV to reduce the logistics impact and operating and support costs. This project supports the development of the FMTV Special Body Variants [Medium Tactical Vehicle (MTV) Tanker, MTV Expandable Van, Light Medium Tactical Vehicle (LMTV) Trailer and MTV Trailer]. FMTV is required to fill 2 1/2 (LMTV) and 5 ton truck (MTV) requirements, resolve operational deficiencies and operate throughout the theater as multi-purpose transportation vehicles used by combat, combat support and combat service support units. This system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain. Vehicles operate in all climatic conditions. In FY 1996, FY 1997 and FY 1998, Project DH07 funds the Army's portion of the Medium Tactical Truck Remanufacture Program (MTTR). This research and development effort is a prelude to embarking on a major remanufacture program to increase the mobility, maintainability and reliability of the existing 5 ton fleet. Funding in FY97 through FY99 harmonizes the Army effort with the U.S. Marine Corps Medium Tactical Vehicle Remanufacture (MTVR) program as directed by Congress. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy is to obtain a Level III Technical Data Package for the FMTV Special Body Variants that were omitted from the first production contract due to budget constraints. This Technical Data Package will be combined with the Technical Data Package obtained from the first contract to enable all models to be produced under the second FMTV production contract. The acquisition strategy for the Medium Tactical Truck Remanufacture Program (MTTR) is to award two prototype contracts, which will lead to production.

FY 1996 Accomplishments:

- 1500 FMTV Technical Data Package
- 976 Prototype Contracts (MTTR)
- 191 Source Selection Evaluation Board (SSEB) (MTTR)
- 106 Technical Support Contract (MTTR)
- 150 Government Engineering (MTTR)
- Total 2923

Project DH07

Page 1 of 5 Pages

Exhibit R-2 (PE 0604604A)

706

Item 70

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604604A Medium Tactical Vehicles

DH07

FY 1997 Planned Program:

- 4162 Prototype Contracts (MTTR)
- 250 Technical Support Contract (MTTR)
- 569 Support Costs (Engineering/Quality/Matrix) (MTTR)
- 750 Developmental Testing (MTTR)
- 143 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 5874

FY 1998 Planned Program:

- 2850 Developmental Testing (MTTR)
- 750 Support Costs (Engineering/Quality/Matrix) (MTTR)
- 129 Technical Support Contract (MTTR)
- Total 3729

FY 1999 Planned Program: Program not funded

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1459	0	0	0
Appropriated Value	1500	5874		
Adjustments to Appropriated Value	+1423			
FY 1998 Pres Bud Request	2923	5874	3729	0

Change Summary Explanation:

Funding: FY96 - + 1500 DA reprogramming to FMTV (Tech Data Package).

FY97 - + 5874 Congressional Add

FY98 - + 3729 Reprogrammed during the FY 98 POM cycle.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
OPA1 Family of Medium Tactical Vehicles (MYP) D15500	146043	238868	209446	364843	272948	332484	444648	459061	Cont	Cont
OPA1 5 Ton Extended Svc Pgm (ESP) DV0010				47314	81983	81715	32700	32786	Cont	Cont

Project DH07

Page 2 of 5 Pages

Exhibit R-2 (PE 0604604A)

707

Item 70

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604604A Medium Tactical Vehicles

PROJECT

DH07

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	2923	5024	879	
Developmental Testing		707	2850	
SBIR/STTR		143		
Total	2923	5874	3729	

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contract

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Teledyne (Prototype)	C-FFP	Oct 88	13515	13515	13515						13515
Tactical Truck (Prototype)	C-FFP	Oct 88	14500	14500	14500						14500
Stewart Stevenson (Prototype)	C-FFP	Oct 88	17204	17204	17204						17204
Stewart Stevenson (Tech Data Pkg)	C-FFP	Oct 91	10100	10100	10100						10100
Stewart Stevenson (Tech Data Pkg update)	SS-FFP	Jun 92	3416	3416	1916	1500					3416
Stewart Stevenson (Special Bodies Prototype)	SS-CPFF	Sep 92	12774	12774	12774						12774
In-House/Eng TACOM, MI			3142	3142	1673	150	569	750			3142
Govt Eng (all other fld activities)			1024	1024	1024						1024

Project DH07

Page 4 of 5 Pages

Exhibit R-3 (PE 0604604A)

709

Item 70

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development										0604604A Medium Tactical Vehicles		
Contractor or	Method/Type	Award or	Performing	Project	Total	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to	Total
Government	or Funding	Obligation	Activity	Office	Prior to	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Complete	Program
Activity	Vehicle	Date	EAC	EAC	FY 1996	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Complete	Program
SSEB, TACOM,			191	191		191						191
MI (MTTR)												
Oshkosh Truck	C-CPFF		2415	2415		488		1927				2415
Corp. (Prototype												
MTTR)												
AM General	C-CPFF		2723	2723		488		2235				2723
(Prototype MTTR)												
Camber (Tech Spt			485	485		106		250	129			485
Contract)												
SBIR/STTR			143	143				143				143
Support and Management Organizations: N/A												
Test and Evaluation Organizations												
TECOM (APG)			7765	7765		7765						7765
(FMTV)												
TECOM (YPG)			3000	3000		3000						3000
(FMTV)												
TEXCOM			4964	4964		4964						4964
(FMTV)												
TECOM (MTTR)			3600	3600				750	2850			3600
Government Furnished Property - None												
Subtotal Product Development						72706	2923	5124	879			81632
Subtotal Support and Management						15729		750	2850			19329
Subtotal Test and Evaluation						88435	2923	5874	3729			100961
Total Project												

Project DH07

Page 5 of 5 Pages

Exhibit R-3 (PE 0604604A)

710

Item 70

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604609A Smoke, Obscurent and Target Defeating
System - Engineering Development

PROJECT

D200

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D200 Smoke/Obscurent Systems	1915	0	0	703	937	2552	4814	8362	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the conduct of Engineering and Manufacturing Development (EMD) in smoke and obscurant agents, munitions, and devices to improve survivability of the combined arms force, complement combined weapons systems, and enhance force effectiveness and combat power. Funding supports (1) Motorized Dual Purpose Mechanical Smoke Generator, M56 mounted on the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) to provide large area visual, infrared (IR) and millimeter wavelength (MMW)-radar obscuration; (2) Generator, Smoke, Mechanical, Mechanized Smoke Obscurent System, M58, consists of components of the M56 mounted on a M113A3 carrier. The M58 will equip smoke units in heavy units resulting in improved vehicle maneuverability and survivability; (3) M81 MMW/IR Smoke Grenades which support the Vehicle Integrated Defense System; (4) Vehicle Engine Exhaust Smoke System which provides on-board obscuration of heavy armor systems. The M81 provides IR and MMW screening from smart Anti-Tank Guided Missiles (ATGM) and top attack weapons. The project in this Program Element supports efforts in the engineering and manufacturing development phase of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: Project D200 - Smoke/Obscurents: The M58 Mechanized Smoke System, primarily an in-house effort, was type classified from the EMD phase. The M58 will purchase smoke generator components, the driver's viewer enhancer and gas particulate filter units on contracts and furnish as GFE to Anniston Army Depot to integrate the components on the converted platform (M113A3). The M56 P31 Modularity program is an in-house effort in the EMD phase. The program will increase the visual obscuration capability of the system from 60 to 90 minutes, and will be developed and tested at CBDCOM. The proven design will then be integrated into the on-going competitively awarded five-year multi-year production contract for the M56 Smoke Generator System. The Vehicle Engine Exhaust Smoke System (VEESS) will be developed in-house and will be applied to systems via modification work order.

FY 1996 Accomplishments:

- 1515 M56-P31 Modularity: Completed design (drawings/technical data).
- 300 M56-P31 Modularity: Conducted technical/user testing.
- 100 M56-P31 Modularity: Conducted Milestone III In-Process Review.
- Total 1915

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98.

Project D200

Page 1 of 4 Pages

Exhibit R-2 (PE 0604609A)

711

Item 71

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

PROJECT

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604609A Smoke, Obscurant and Target Defeating
System - Engineering Development

D200

FY 1999 Planned Program:

- 703 VEES-Integrate engineering study/proof of principle and initiate maintenance work order preparation and approval.

Total

703

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Budget Request

FY 1996

1945

2000

-85

1915

FY 1997

FY 1998

FY 1999

2745

703

Change Summary Explanation: FY 1999 funding (-2042) reprogrammed to PE 0602622A, A552 to support technology base for P3I MMW program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 2, PE 0602622A	1728	2259	4739	6691	4167	4231	4314	4411	Cont'd	Cont'd
Project A552 Smoke/Novel Effects Munitions										
RDTE,A Budget Activity 4, PE 063627A, Project	2623	6246	0	0	0	0	0	5155	Cont'd	Cont'd
DE79 Smoke, Obscurant and Equipment										
Defeating Systems										
OPA-3,A Appropriation	0	12506	12560	19115	0	0	20831	18882	Cont'd	Cont'd
M99103, M56 Smoke Generator	12301	11587	9195	10895	7965	10566	11903	9937	Cont'd	Cont'd
M99107, M58 Smoke Generator	5052	3475	0	0	0	0	0	0	8527	8527
M99104, M157A2 Smoke Generator	0	0	2164	4752	2317	0	0	0	0	9233
G70700, LVOSS										

Project D200

Page 2 of 4 Pages

Exhibit R-2 (PE 0604609A)

Item 71

712

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604609A Smoke, Obscurant and Target Defeating
System - Engineering Development

PROJECT

D200

D. Schedule Profile

FY 1996

4

1

2

3

4

1

2

M56-Complete P3I Modularity Design

X*

M56-Complete P3I Mod Tech/User Test

X*

M56-Conduct P3I Modularity MS III

X*

VEESS-Initiate Maint Work Order

X

*Milestone completed

Project D200

Page 3 of 4 Pages

Exhibit R-2 (PE 0604609A)

713

Item 71

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604609A Smoke, Obscurant and Target Defeating

D200

System - Engineering Development

A. Project Cost Breakdown

FY 1996 FY 1997 FY 1998 FY 1999

Primary Hardware Development

290

Systems Engineering

422

Integrated Logistics Support

190

Quality Assurance

100

Reliability, Maintainability and Availability

10

Configuration Management

50

Technical Data

90

Test and Evaluation

263

Government Engineering Support

200

Program Management Support

150

Program Management Personnel

150

Hardware

1915

703

Total

B. Budget Acquisition History and Planning Information: Not applicable.

Project D200

Page 4 of 4 Pages

Exhibit R-3 (PE 0604609A)

714

Item 71

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604611A Javelin

D499

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	Cost to Complete	Total Cost
	D499 JAVELIN	2249	6014	8018	5277	0	0	0	634870

A. Mission Description and Budget Item Justification This Program Element (PE) provides for the continuation of Engineering and Manufacturing Development (EMD) of a manportable antitank weapon system for the combined arms team employment. The infantry must have the capability to defeat numerically superior armored forces. The present medium infantry antitank weapon is DRAGON. The system developed within this PE will replace the DRAGON to provide enhanced lethality for the early entry force. It will have a high kill rate against all known armor threats at extended ranges under day/night, adverse weather conditions and in the presence of battlefield obscurants. This system will be hardened against countermeasures and will not require extensive training for effective employment. Active protection system developments will be considered and modifications studied to defeat these devices if necessary. Integration of Advanced Main Charge Warhead and Lethality Improvement Tracker Enhancement technologies will be pursued. This project supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and therefore is appropriate to Budget Activity 5.

Acquisition Strategy: Not Applicable.

FY 1996 Accomplishments:

•	93	Program Management
•	1667	Test Support
•	378	Lethality Improvement Tracker Enhancement (LITE)
•	111	Advanced Main Charge Warhead (AMCW)
Total	2249	

FY 1997 Planned Program:

•	301	Program Management
•	600	Test Support
•	1035	Lethality Improvement Tracker Enhancement
•	3931	Advanced Main Charge Warhead
•	147	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	6014	

Project D499

Page 1 of 4 Pages

Exhibit R-2 (PE 0604611A)

715

Item 72

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT			
5 - Engineering and Manufacturing Development		0604611A Javelin						D499			
FY 1998 Planned Program:											
•	400	Program Management									
•	1044	Test Support									
•	1403	Lethality Improvement Tracker Enhancement									
•	5171	Advanced Main Charge Warhead									
	Total	8018									
FY 1999 Planned Program:											
•	264	Program Management									
•	4661	Test Support									
•	352	Advanced Main Charge Warhead									
	Total	5277									
B. Project Change Summary											
	FY 1997	President's Budget									
		Appropriated Value									
		Adjustments to Appropriated Value									
	FY 1998	Pres Budget Request									
Change Summary Explanation: FY96 funding (+1249) reprogrammed in for tracker performance upgrade. FY 98/99 adjustments (FY 98 +6470/FY 99 +5277) to support Advanced Main Charge Warheads.											
C. Other Program Funding Summary											
	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost	
	200858	195281	143112	326623	465962	409511	475873	7061	95314	2756628	
	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999		
	1	2	3	4	1	2	3	4	1	2	3
	X*										
D. Schedule Profile											
	Conduct System Level Live Fire Tests										
	First Unit Equipped										
	Full Rate Production Decision (ASARC)										
	Award Year One of First Multiyear Contract										
Project D499											
Page 2 of 4 Pages											
Exhibit R-2 (PE 0604611A)											

Page 2 of 4 Pages

716

Exhibit R-2 (PE 0604611A)

Item 72

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE												DATE	PROJECT			
5 - Engineering and Manufacturing Development		0604611A Javelin												February 1997	D499			
D. Schedule Profile		FY 1996				FY 1997				FY 1998				FY 1999				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Advanced Main Charge Warhead(AMCW)																		
AMCW Final Design																		
AMCW Lethality Test																		
AMCW Live Fire Phase I/II Tests																		

Exhibit R-2 (PE 0604611A)

Page 3 of 4 Pages

Project D499

717

Item 72

UNCLASSIFIED

RD&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604611A Javelin

PROJECT

D499

A. Project Cost Breakdown				FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Program Management			93	301	400	264			493456
Test Support			1667	600	1044	4661			14086
Lethality Improvement Tracker Enhancement			378	1035	1403			352	2963
Advanced Main Charge Warhead			111	3931	5171				
SBIR/STTR				147					
Total			2249	6014	8018	5277			
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
Product Development Organizations									
TI/MM JV EMD	C/CPIF	21Jun89	462700		493456	0	3884		
TI/MM JV AMCW	CPIF	28Mar94	N/A		4521	111	1082	5171	352
TI/MM JV LITE	CPAF	28Jun96	N/A			378	1802	1403	
SBIR/STTR							147		
Support and Management Organizations									
Support Contractor	8(a) CPFF		N/A		6747				
Program Mgmt					80232	93	301	400	264
Test and Evaluation Organizations									
TECOM					19513	705	600	1044	4661
OPTEC					8843	937			
ARL						25			
Government Furnished Property: Not Applicable.									
Subtotal Product Development Organizations									
Subtotal Support and Management Organizations									
Subtotal Test and Evaluation Organizations									
Total									

Project D499

Page 4 of 4 Pages

Exhibit R-3 (PE 0604611A)

718

Item 72

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604619A Landmine Warfare

D088

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D088 Wide Area Munition (WAM)	29453	26288	19800	23075	0	0	0	0	0	251916

A. Mission Description and Budget Item Justification: The Wide Area Munition (WAM), a "smart," remotely-reprogrammable antitank mine, provides unique control and offensive capability for a variety of missions. WAM will significantly reduce Army losses by using advanced smart munitions technology on the battlefield. The program provides for Engineering and Manufacturing Development (EMD) of the Basic WAM deployed by hand emplacement with one-way communications. The pre-planned product improvement Basic WAM with two-way command and control and redeployable capabilities will use advanced sensors, computer technology, and warhead technology to extend the range and lethality of the WAM. The project in this Program Element supports the EMD phase of the acquisition strategy for the WAM and is, therefore, appropriately placed in Budget Activity 5.

Acquisition Strategy: The Basic WAM transitioned to Low Rate Production (LRP) in 3QFY96. A sole source Fixed Price Incentive Fee contract was awarded to the EMD contractor for the LRP quantity. Type classification standard is planned for 4QFY97. Production buys will be included under the LRP contract as Firm Fixed Price options. A sole source Cost Plus Incentive Fee contract for EMD of an improved WAM was awarded to the Basic WAM developer in FY 1996. Type Classification standard of the improved WAM is planned for 4QFY99.

FY 1996 Accomplishments:

- 4887 Completed basic WAM integration and assembly design
- 12291 Fabricated technical test/initial operational test and evaluation (TT/IOTE)/live fire hardware for basic WAM
- 6800 Initiated TT/IOTE/live fire test for basic WAM
- 650 Designed and built basic WAM prototype individual trainer and collective trainer software
- 4825 Initiated design efforts for WAM PIP integration of two-way command & control and redeployability
- Total 29453

FY 1997 Planned Program:

- 21427 Complete TT/IOTE/live fire test for basic WAM
- 750 Conduct testing for basic WAM individual trainer and collective trainer software
- 3508 Conduct WAM PIP Initial Platform and Control Unit design effort
- 603 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 26288

Project D088

Page 1 of 4 Pages

Exhibit R-2 (PE 0604619A)

719

Item 73

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604619A Landmine Warfare

D088

Planned Program:

- | | |
|-------|-------|
| Total | 19800 |
|-------|-------|

FY 1999 Planned Program:

- | | |
|-------|-------|
| Total | 23075 |
|-------|-------|

FY 1999

FY 1998

FY 1997

26288

26288

Change Summary Explanation:

scheduled (4Q99) Type Classification.

C. Other Program Funding Summary

RDTE. A Budget Activity 5

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 200

Page 2 of 4 Pages

Exhibit R-2 (PE 0604619A)

720

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604619A Landmine Warfare

PROJECT

D088

D. Schedule Profile

	FY 1996		FY 1997		FY 1998			FY 1999				
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Basic WAM Low Rate Production Milestone Review												
Complete Live Fire Test					X*							
Complete TT/IOTE Testing												
Complete Functional Configuration Audit												
Complete Basic WAM Milestone III												
Complete Initial WAM PIP Trade-Off Studies & Initiate Design Efforts				X*								
Complete WAM PIP Ground Platform Preliminary Design Review												
Complete Contractor System Test								X				
WAM PIP Functional Specification										X		
Complete Procurement, Fabrication of TT System Hardware										X		
Complete IOT&E Testing												
WAM PIP Milestone III												X

* Milestone Completed

Project D088

Page 3 of 4 Pages

Exhibit R-2 (PE 0604619A)

721

Item 73

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604619A Landmine Warfare				
		FY 1996	FY 1997	FY 1998	FY 1999	
A. Project Cost Breakdown						
Primary Hardware Development		18621	17080	12850	10678	
Test and Evaluation		3321	2501	1900	6000	
Government Engineering Support		6735	5436	4300	5597	
Government Program Management		776	668	750	800	
SBIR/STTR			603			
Total		29453	26288	19800	23075	
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type					
Performing	or Funding					
Activity	Vehicle					
	Award or					
	Obligation					
	Date					
	Performing					
	Activity					
	EAC					
Product Development Organizations						
Textron	CPIF					
	June 1996					
Textron	CPIF					
	June 1990					
Support and Management Organizations						
ARDEC						
PM-MCD						
Other (Misc)						
SBIR/STTR						
Test and Evaluation Organizations						
TECOM						
Government Furnished Property: None.						
Subtotal Product Development		120090	18621	17080	12850	179319
Subtotal Support and Management		28509	7511	6707	5050	54174
Subtotal Test and Evaluation		4701	3321	2501	1900	18423
Total Project		153300	29453	26288	19800	251916
Project D088						
Page 4 of 4 Pages						
Exhibit R-3 (PE 0604619A)						

Project D088

Page 4 of 4 Pages

Exhibit R-3 (PE 0604619A)

722

Item 73

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	2605	1958	0	0	0	0	13757	18773	Continuing	Continuing
D659 Family of Heavy Tactical Vehicles	803	1958	0	0	0	0	0	0	2761	2761
DE43 Semi-Trailer Van	1802	0	0	0	0	0	0	0	1802	1802
DE49 Heavy Expanded Mobility Tactical Truck	0	0	0	0	0	0	8785	8831	Continuing	Continuing
DE53 Line Haul/Light Equipment Transporter	0	0	0	0	0	0	4972	9942	Continuing	Continuing

Mission Description and Budget Item Justification: Program element funds various heavy tactical vehicle capabilities to support combat and combat support missions.

These missions include the following: line haul, local haul, unit resupply, and transporting water, ammo, and general cargo. This program element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604622A Family of Heavy Tactical Vehicles								D659	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D659	Family of Heavy Tactical Vehicles	803	1958	0	0	0	0	0	0	2761	2761
<p>A. Mission Description and Justification: This project supports requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users. Specific requirements have been identified for development of alternate flatrack studies; a Palletized Load System (PLS) Universal Power Interface Kit, which will provide interface for various PLS flatrack or module-based applications; a Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS), required to determine the effectiveness of the lighter PLS in meeting the mission requirement of airborne units through its enhanced air deployability; the HEMTT Extended Service Program (ESP); and the Forward Repair System (FRS), intended to meet the requirements for a maintenance shop capability to keep up with rapidly moving combat vehicles.</p> <p>Acquisition Strategy: The acquisition strategy is to develop and test prototypes to determine producibility and feasibility of incorporating vehicles into future production contracts.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 136 Flatrack Prototype Overrun/Testing/Studies. • 142 GFE for Prototype/Concept Evaluation (FRS). • 20 Vehicle Modeling for 5000 Gallon Fueler. • 135 HEMTT-LHS Conversion. • 60 PLS Universal Power Interface Kit Development. • 220 Modeling/Testing for Fuel Tank Flatrack/Rollover Studies. • 90 PLS Alternator. Total 803 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 200 Analysis of HEMTT ESP design alternatives • 570 Analysis of selected designs • 380 HEMTT ESP modeling • 760 HEMTT ESP testing • 48 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs Total 1958 											

Project D659

Page 2 of 7 Pages

Exhibit R-2 (PE 0604622A)

724

Item 74

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

D659

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	824	FY 1997	0	FY 1998	0	FY 1999	0
	845		1958				
	-42						
	803		1958		0		0

Change Summary Explanation: Funding: FY97 (+1958) Congressional increase to support development of the HEMTT ESP

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
OPA1, DA0500, Family of Heavy Tactical Vehicles	119655	243841	9071	162647	59098	97389	124946	124254		

D. Schedule Profile

1	2	3	4	1	2	3	4	1	2	3	4
	X*										

Provided GFE for FRS Prototype

FRS Concept Evaluation/Test

Awarded Prototype Contract (HEMTT-

LHS)

Award HEMTT Dev/Prototype Contract

HEMTT ESP test

X

X

FY 1998

FY 1999

*Milestone Complete

Project D659

Page 3 of 7 Pages

Exhibit R-2 (PE 0604622A)

725

Item 74

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

PROJECT

D659

A. Project Cost Breakdown

FY 1996

FY 1997

FY 1998

FY 1999

Product Development

590

1150

Developmental Testing

213

760

SBIR/STTR

48

Total

803

1958

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

94

213

90

102

91

1150

48

973

Support and Management Organizations: None

Test and Evaluation Organizations

TECOM

Sep 96

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

590

213

803

1198

760

1958

1788

973

2761

Page 4 of 7 Pages

Exhibit R-3 (PE 0604622A)

726

Item 74

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

PROJECT

DE43

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE43 Semi-Trailer Van	1802	0	0	0	0	0	0	0	1802	1802

A. Mission Description and Justification: This project supports requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users. Specific requirements have been identified for development of potable water in the corps/brigade support areas. Currently, the XM1098 is the only 5000 Gallon Water Carrier in the Army's inventory. This vehicle can only be utilized in warm weather climates where there is no danger of the water freezing or becoming too hot for consumption. The users' water requirements will be better satisfied by enabling the XM1098 to be used in a variety of temperature scenarios. The heater/chiller kit will enhance the XM1098 capability by maintaining the tanker water temperature in the desirable range of 40-80 degrees Fahrenheit. The kit will also provide the capability of providing on-demand hot (180 degree F) and cold (55 degree F) water, regardless of ambient conditions. This funding supports the second phase of this project which will be an integrated technical demonstration of the feasibility of a heater/chiller system comprised of an external insulation, integrated power supply, an on-demand heating/cooling system and a recirculation system. This effort also includes fluid level and temperature gauges, and upgraded lighting systems not currently available on the XM1098.

Acquisition Strategy: The acquisition strategy is to develop and demonstrate two technology test beds to address the potential technology enhancements to the XM1098.

FY 1996 Planned Program:

- 100 Market survey of Technical Alternatives.
- 200 Thermal Simulation and Analysis.
- 200 System characteristics (Develop Corrosion Resistant Coating).
- 200 Cross Country Mobilization Simulation & Analysis.
- 150 Technology Integration.
- 200 Conceptual Design.
- 400 Technology Component Acquisition.
- 50 System Modification.
- 200 System Installation.
- 52 Technology Demonstration.
- 50 Final Report.
- Total 1802

FY 1997 Planned Program: Program not funded in FY 97

Project DE43

Page 5 of 7 Pages

Exhibit R-2 (PE 0604622A)

727

Item 74

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										
BUDGET ACTIVITY					PE NUMBER AND TITLE				DATE	PROJECT
5 - Engineering and Manufacturing Development					0604622A Family of Heavy Tactical Vehicles				February 1997	DE43
FY 1998 Planned Program: Program not funded in FY 98										
FY 1999 Planned Program: Program not funded in FY 99										
B. Project Change Summary										
FY 1997 President's Budget					FY 1996	FY 1997	FY 1998	FY 1999		
Appropriated Value					1848	0	0	0		
Adjustment to Appropriated Value					1900					
FY 1998 Pres Bud Request					-98					
					1802	0	0	0		
C. Other Program Funding Summary: None										
D. Schedule Profile										
Market Survey					FY 1996	FY 1997	FY 1998	FY 1999		
Thermal Simulation and Analysis					1	2	3	4	1	2
System Characteristics (Develop					X*	2	3	4	1	2
Corrosion Resistant Coating)					X*					3
Cross Country Mobilization Simulation					X*					4
Technology Integration										
Conceptual Design										
Tech Component Acquisition										
System Modification										
System Installation										
Technology Demonstration										
System Test										
Final Report										
*Milestone Complete										

Project DE43

Page 6 of 7 Pages

Exhibit R-2 (PE 0604622A)

Project DE43

Page 6 of 7 Pages

Exhibit R-2 (PE 0604622A)

728

Item 74

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

DE43

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Project Development	1802			
Integration/Demonstration				
Total	1802			

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CAETECH	CPFF	Nov 95				1802					1802

Product Development Organizations

Support and Management Organizations: None
 Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development	1802
Subtotal Support and Management	
Subtotal Test and Evaluation	
Total Project	1802

Project DE43

Page 7 of 7 Pages

Exhibit R-3 (PE 0604622A)

729

Item 74

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604633A Air Traffic Control

PROJECT

D586

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	D586 Air Traffic Control	5073	7377	1705	1729	2026	2079	2251	2354	Continuing

A. Mission Description and Budget Item Justification: This program element funds continuously evolving efforts for the development of Air Traffic Control (ATC) systems for both tactical and fixed base applications. It funds the integration and qualification of an Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) and Mobile Tower System (MOTS). This system provides urgently needed communications and precision/non-precision approach and flight following capability in support of Army tactical airfields, remote landing zones, drop zones, pickup zones and temporary helicopter operating areas worldwide. MOTS automated tower system is designed to integrate with secure modernized aircraft communications. This is a non-developmental item (NDI) program. Fixed base ATC efforts funded by this line include Navigation Air Systems Modernization, Communication System Modernization and digitization of the ATC structure. The tasks in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy is to procure an ATNAVICS prototype through a Cost Plus Fixed Fee (CPFF) contract for integration of electronic/radar components to include design, development, and testing of an integrated prototype over a three year period. An additional component of the strategy is to continue concept exploration and design definition of the MOTS.

FY 1996 Accomplishments:

ATNAVICS

- 4657 Continued Prototype System for Developmental Testing/Initial Operational Test Evaluation
- 295 System performance

TAIS

- 50 System concept design definition
- 71 Conducted suitability study and cost saving data

Total 5073

Project D586

Page 1 of 5 Pages

Exhibit R-2 (PE 0604633A)

730

Item 75

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604633A Air Traffic Control

PROJECT

D586

5 - Engineering and Manufacturing Development

FY 1997 Planned Program:

ATNAVICS

- 6577 Continue development of prototype
- 574 Developmental and Operational Testing

MOTS

- 50 Pre-market analysis for state of the art systems solution
- 176 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 7377

FY 1998 Planned Program:

ATNAVICS

- 1130 Development and Operational Testing
- 475 Refurbishment for Fielding

MOTS

- 50 Market Analysis
- 50 Evaluation and Suitability Study and Cost Savings Data
- Total 1705

FY 1999 Planned Program:

MOTS

- 360 Design Definitization/Integration Analysis
- 1369 Procure Prototype System for Developmental Testing
- Total 1729

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
1764	5549	1825	1860
1813	7377		
+3260			
5073	7377	1705	1729

Change Summary Explanation: Funding: FY 96 (+3260) reprogrammed in support of ATNAVICS development. FY97 (+1828) Congressional reprogramming from procurement for ATNAVICS.

Project D586

Page 2 of 5 Pages

Exhibit R-2 (PE 0604633A)

731

Item 75

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604633A Air Traffic Control

D586

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA AA0050 - Air Traffic Control	12555	6395	5802	5854	9210	40256	30797	36364	Cont'd	Cont'd

D. Schedule Profile											
ATNAVICS System Performance											
FY 1996			FY 1997			FY 1998			FY 1999		
1	2	3	4	1	2	3	4	1	2	3	4
			X					X			

ATNAVICS Testing

ATNAVICS Development/Operational Testing

MOTS Market Analysis
MOTS Evaluation and Suitability Study/Cost Savings Data

ATNAVICS Refurbishment for Fielding

Procure MOTS Prototype System for Development Testing

0
A
B
C
D
E
F
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H
I
J
K
L
M
N
O
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Q
R
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W
X
Y
Z

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Exhibit R-2 (PE 0604633A)

Item 75

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604633A Air Traffic Control

D586

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	
Contractor Engineering Support	344	297	145	145	
Primary Hardware Development	4061	5943		969	
Program Management Support	456	387	430	435	
Development Test and Evaluation		574	1130	180	
Government Furnished Equipment	212				
SBIR/STTR		176			
Total	5073	7377	1705	1729	

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Raytheon	CPFF	Mar 96		13631	9570	4061				0	13631
Raytheon	CPFF	Dec 97		6658			5943			715	6658
MOTS	TBD	Dec 99							969	Cont	Cont
Support and Management Organizations											
Army Aviation & Troop Command (ATCOM)				708		456	387	345	350	Cont	Cont
CECOM				1248		344	297	230	230	Cont	Cont
Test and Evaluation Organizations											
TEXCOM							574	1130	180	Cont	Cont
SBIR/STTR							176				176

Project D586

Page 4 of 5 Pages

Exhibit R-3 (PE 0604633A)

733

Item 75

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1997	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE			D586			
5 - Engineering and Manufacturing Development		0604633A Air Traffic Control						
Government Furnished Property								
Contract								
Item	Method/Type	Award or	Delivery	Total				
Description	Vehicle	Obligation	Date	FY 1996	FY 1997	FY 1998	FY 1999	
Product Development Property				212	212			
Support and Management Property: None								
Test and Evaluation Property: None								
Subtotal Product Development								
Subtotal Support and Management								
Subtotal Test and Evaluation								
Total Project								
				9570	5943		969	Cont
				1956	800	575	580	Cont
					750	1130	180	Cont
				11526	5073	1705	1729	Cont

Project D586

Page 5 of 5 Pages

Exhibit R-3 (PE 0604633A)

734

Item 75

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control

PROJECT

DG27

Vehicle

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG27 Future Command and Control Vehicle	17306	7734	8867	0	0	0	0	0	0	111934

A. Mission Description and Budget Item Justification: The Command and Control Vehicle (C2V) is a highly mobile, survivable, and responsive tracked platform designed for use by battalion through corps battle staffs in heavy force operations. It provides a reconfigurable (tailorable) command and control capability able to host both current and future command, control, communications, computer, and intelligence (C4I) systems. The C2V supports the Army's Force XXI/Digitization efforts and will be compatible with Army Tactical Command and Control Systems. The C2V began as a Desert Storm initiative in response to shortcomings in the current M577 Command Post Vehicle. The C2V is currently in Low Rate Initial Production (LRIP) and is appropriately placed in Budget Activity 5.

Acquisition Strategy: C2V approved for type classification and Low Rate Initial Production (LRIP) quantity of 46 vehicles in 4Q96. Based on the LRIP decision, the Army will procure 439 C2V vehicles. Follow-on Sole-Source/Firm Fixed Price & Cost Plus Incentive Fee contracts and Fixed Price with Options (FPO) contracts are in place for C2V Low Rate Initial Production (LRIP). C2V LRIP focus on testing and production planning to meet Initial Operational Test and Evaluation (IOTE) and First Unit Equipped (FUE) in FY99.

FY 1996 Accomplishments

- 4525 Developed Technical Data Package; Began Producibility Engineering Effort
- 2657 Logistics Engineering Effort
- 4234 Continued Design Engineering; Component/Production Verification and Contractor Test Support
- 961 Prototype Manufacturing
- 759 Began Live Fire Testing
- 2016 Conducted Technical Testing and Limited User Testing
- 2154 Project Management
- Total 17306

FY 1997 Planned Program:

- 652 Complete Technical Data Package/Continue Producibility Engineering Effort
- 1382 Logistics Effort
- 775 Prototype Manufacturing
- 872 Complete Technical Testing

Project DG27

Page 1 of 4 Pages

Exhibit R-2 (PE 0604640A)

735

Item 76

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control Vehicle

PROJECT

DG27

FY 1997 Planned Program: (continued)

• 1549 Continue Live Fire Testing

• 1085 Direct Support Electrical System Test Set/Advanced Collective Integrated Protective System Development/Procurement

• 1245 Project Management

• 174 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 7734

FY 1998 Planned Program

• 1804 Complete Contractor Test Support; Perform Refurbishment/Rework of Test Vehicles

• 2602 Complete Live Fire Testing

• 4418 Complete Production Verification Testing

• 43 Project Management

Total 8867

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	17739	6649	6759	0
Appropriated Value	18238	7734		
Adjustments to Appropriated Value	-932			
FY 1998 President's Budget Request	17306	7734	8867	0

Change Summary Explanation:

Funding: 1085 increase in FY 97 applied to DSESTS/ACIPS.

Funding: 2108 increase in FY 98 due to realignment from WTCV to complete Live Fire testing.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
GA84200 Command & Control Vehicle		48939	30897	62681	100013	122929	86755	123902	Compl
GE0173 Spares (Initial) C2V			941	882					Cont.
									Cont.
									Cost

Project DG27

Page 2 of 4 Pages

Exhibit R-2 (PE 0604640A)

736

Item 76

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control

DG27

Vehicle

D. Schedule Profile

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Deliver Pre-Production Vehicles	X*							
Begin Live Fire Testing		X*						
LRIP IPR				X*				
Award LRIP Contracts								
Complete Developmental/Technical Tests								
Support to Task Force XXI								
Complete Production Verification Test								X
Complete Live Fire Testing								X

* Milestone Completed.

Project DG27

Page 3 of 4 Pages

Exhibit R-2 (PE 0604640A)

737

Item 76

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control

DG27

Vehicle

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Design Engineering	11416	3119	1804	
Prototype Manufacture	961	775		
Test	2775	2421	7020	
Project Management	2154	1245	43	
SBIR/STTR		174		
Total	17306	7734	8867	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
United Defense LP			63914	65718	50528	10577	2809	1804		65718	
Other Contracts			18046	19131	16246	1800	1085			19131	

Support and Management Organizations

TACOM					3343	1300	945	23		5611
CECOM					4059	854	300	20		5233
US Army Europe					2481		174			2481
SBIR/STTR										174

Test and Evaluation Organizations

APG, YPG, White Sands					1370	2775	2421	7020		13586
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Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Subtotal Product Development	66774	12377	3894	1804		84849
Subtotal Support and Management	9883	2154	1419	43		13499
Subtotal Test and Evaluation	1370	2775	2421	7020		13586
Total Project	78027	17306	7734	8867		111934

Project DG27

Page 4 of 4 Pages

Exhibit R-3 (PE 0604640A)

738

Item 76

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604641A Tactical Unmanned Ground Vehicle										February 1997		DE47	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost				
DE47	Tactical Unmanned Ground Vehicle (TUGV)	0	2823	2687	2663	2656	2641	0	0	0	13470				

A. Mission Description and Budget Item Justification: The Army has the lead for this joint service program. The development of a Tactical Unmanned Ground Vehicle (TUGV) provides the commanders the ability to see the battlespace while at the same time reducing soldiers' exposure during dangerous reconnaissance, surveillance, target acquisition (RSTA) and nuclear biological and chemical (NBC) detection missions. Performs as a force multiplier, eliminates trickle-down combat information, reduces the "fog-of-war" and fills the brigade intelligence gap. Most importantly, the TUGV will displace brigade and battalion commanders from the bottom of the combat intelligence food chain. Six unmanned systems per battalion, operating out front, provide a force multiplication capability where TUGV's report the nature of the terrain, find the enemy, locate obstacles, acquire targets, detect chemical vapors, and provide this information directly to those who need it the most--the battalion commander's battle staff. This project is OSD funded through Milestone II (3rd Qtr FY 98). This PE supports the critical transition of Defense Advance Research Project Agency (DARPA) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles so that they can be assessed (maturity, supportability, operationally) during user appraisals, packaged and readied for incorporation into the TUGV Engineering and Manufacturing Development (EMD) performance specifications. This project is not a new start, was previously funded by OSD PE 0603709D. PE supports research efforts in the engineering, manufacturing and design phase of the acquisition cycle and is therefore placed in Budget Activity 5.

Acquisition Strategy: The Joint Project Office is following a disciplined Evolutionary Acquisition strategy. This strategy requires horizontal technology integration (HTI) of emerging sensors, lasers, and command and control data link technologies so that the first generation TUGV will enable soldiers to perform dangerous RSTA, NBC detection, and targeting missions from remote and safer locations. This program differs from traditional acquisition programs by incorporating an in-house Program Definition and Risk Reduction phase. Prototype systems are being built during this phase using state-of-the-art sensors, controlling actuators, low bandwidth communications, mission planning, and off-road navigation technologies. This program definition and risk reduction phase will produce a system and interface specifications and detailed analysis to demonstrate Milestone (MS) I exit criteria and facilitate Cost and Operational Effectiveness Analysis (COEA) studies. The program utilizes a TUGV Integrating Integrated Product Team (IIPT) approach. A full and open competition will be conducted at MS II to select a system prime contractor.

FY 1996 Accomplishments: Project funded in FY 1996 under OSD PE 0603709D.

FY 1997 Planned Program:

- 2754 Transfer mature technologies from DARPA Demonstration (Demo) II Program [off-road and way point navigation, low bandwidth teleoperation and mission planning, and long-range Thermal Weapon Site (TWS)]. Integrate and demonstrate HTI of critical sensor technologies from both Demo II and other Program Managers. Support user appraisal activities with the US Army Infantry School, Ft. Benning, GA.
- 69 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)

Total 2823

Project DE47

Exhibit R-2 (PE 0604641A)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604641A Tactical Unmanned Ground Vehicle

PROJECT

DE47

FY 1998 Planned Program:

- 2687 Complete transfer of mature technologies from DARPA Demo II Program (off-road and way point navigation, low bandwidth teleoperation and mission planning, and long-range TWS). Integrate and demonstrate HTI of critical sensor technologies from both Demo II and other PMs.

Total	2687
-------	------

FY 1999 Planned Program:

- 2663 In compliance with Evolutionary Acquisition Strategy, identify and transition technological enhancement candidates from DARPA into TUGV EMD design.

Total	2663
-------	------

B. Project Change Summary

FY 1996

FY 1997

FY 1998

FY 1999

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 BES/Pres Bud Request

C. Other Program Funding Summary

[illegible]

D. Schedule Profile

FY 1996

2

Milestone I Decision

Approved Joint ORD

Begin Developmental Testing

Initiate User Appraisals

Critical Tech Tr - Contract Award

Develop Draft EMD RFP

Release EMD RFP

Initiate EMD Source Selection

Initiate Milestone II Documentation

Complete Phase I User Appraisal

EMD MS II Decision

Project DE47

Page 2 of 4 Pages

Exhibit R-2 (PE 0604641A)

740

Item 77

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604641A Tactical Unmanned Ground Vehicle

PROJECT

DE47

D. Schedule Profile

FY 1996	
1	2 3

F.Y 1998

F.V. 1996

Award EMD Contract

Initiate DARPA Tech Enhancement Effort

*Denotes completed effort

Project DE47

Page 3 of 4 Pages

Exhibit R-2 (PE 0604641A)

741

Item 77

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3970	2937	9909	39919	896	1766	0	0	59397	59397
DE40 Hi Mob Multi-Purp Whld Veh (HMMWV) Prototype	0	2937	9909	39919	896	1766	0	0	55427	55427
DE41 Armored Security Vehicle (ASV)	3970	0	0	0	0	0	0	0	3970	3970

Mission Description and Budget Item Justification: This PE supports all Light Tactical Wheeled Vehicles such as the High Mobility Multi-purpose Wheeled Vehicle (HMMWV), HMMWV Extended Service Program (ESP), Commercial Utility Cargo Vehicle (CUCV) and the Armored Security Vehicle (ASV). In FY 1996 Project DE41 funds the Armored Security Vehicle (ASV) and HMMWV Extended Service Program (ESP). Beginning in FY 1997, Project DE40 funds the RDT&E effort for development of the remanufacture program as well as the next generation HMMWV leading to procurement in FY 2000. The next generation HMMWV represents a new start in FY1998. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle								DE40	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE40	Hi Mob Multi-Purp Whld Veh (HMMWV) Prototype	0	2937	9909	39919	896	1766	0	0	55427	55427

A. Mission Description and Budget Item Justification: The HMMWV is a lightweight, high performance, four-wheel drive, air transportable and air droppable, high mobility tactical family of wheeled vehicles. The HMMWV continued production is required to support expanding mission roles. In addition to the continued roles of Personnel Carrier, TOW Anti-tank Carrier, Armament Carrier, Shelter Carrier and Ambulance, new missions and threats have generated the need to increase payload and protection levels for the HMMWV. The new HMMWV's will have reduced vehicle width which will permit the vehicle to be loaded into the CH-53, as well as operate better in Third World environments on narrow streets. The HMMWV will comply with all Federal and European Community safety and environmental standards, to include full roll-over protection in accordance with Federal Motor Vehicle Safety Standards (FMVSS) for off-road construction equipment. The HMMWV consists of a single chassis that can be adapted to any one of four models at Direct Support (DS) or General Support (GS) level. The four models include: Cargo/Utility, Armor, Ambulance and Shelter Carrier. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy for the development phase of the HMMWV is to award one prototype contract, which will lead to a non-competitive award of a five-year multi-year production contract in FY 2000.

FY 1996 Accomplishments: In FY 1996 Project DE41 funds the Armored Security Vehicle (ASV) and HMMWV Extended Service Program (ESP).

FY 1997 Planned Program:

- 2605 Service Support Contract
- 260 Support Costs (Engineering/Quality/Matrix)
- 72 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2937

FY 1998 Planned Program:

- 5000 Prototype Contract (HMMWV II)
- 2600 Prototype Contract (ReMan HMMWV)
- 1000 Source Selection Evaluation
- 1309 Support Costs (Engineering/Quality/Matrix)
- Total 9909

Project DE40

Page 2 of 7 Pages

Exhibit R-2 (PE 0604642A)

Item 78

744

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

DE40

FY 1999 Planned Program:

- 16271 Prototype Contract (HMMWV II)
- 3100 Prototype Contract (ReMan HMMWV)
- 5700 Technical Data
- 7533 Support Costs (Engineering/Quality/Matrix)
- 7315 Developmental Testing
- Total 39919

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996 FY 1997 FY 1998 FY 1999

2937

2937 9909 39919

Change Summary Explanation:

Funding: FY97 (+ 2937) Congressional increase

FY98 (+9909) and FY99 (+39919) restructure to support next generation HMMWV.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont Cont
OPA1 HMMWV (D15400)	124959	162691	66233	14124	120494	114498	129019	234510		
OPA1 HMMWV ESP (DV0230)				49890	85195	89863	31710	31793		

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
Source Selection Evaluation (RDT&E)	1	2	3	4	1	2	3	4	
Award RDT&E Contract					X				
Integrated Testing						X			X

Project DE40

Page 3 of 7 Pages

Exhibit R-2 (PE 0604642A)

745

Item 78

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle			DE40
A. Project Cost Breakdown					
Product Development	FY 1996	FY 1997	FY 1998	FY 1999	
Developmental Testing		2865	9909	32604	
SBIR/STTR		72	0	7315	
Total		2937	9909	39919	
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Contract				
Government	Method/Type	Award or	Performing		
Performing	or Funding	Obligation	Activity		
Activity	Vehicle	Date	EAC		
Product Development Organizations					
Contractor TBD	CPFF				
SSEB TACOM,					
MI					
In-House/Eng					
TACOM, MI					
AM General,					
System Tech Spt					
Technical Data					
Pkg Contract TBD					
SBIR/STTR					
Support and Management Organizations					
N/A					
Test and Evaluation Organizations					
TECOM (APG)					
Government Furnished Property - None					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					
Project DE40					

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

DE41

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE41 Armored Security Vehicle (ASV)	3970	0	0	0	0	0	0	0	3970	3970

A. Mission Description and Budget Item Justification: The Armored Security Vehicle (ASV) is a turreted, lightly armored all-wheel drive combat support vehicle which will provide essential protection to selected Military Police units in highly exposed threat environments. The Military Police (MP) currently use the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). The ASV is required to provide improved ballistic protection and to increase payload and NBC protection to the MP teams. The need for such a wheeled vehicle was highlighted by recent humanitarian missions such as Operation Restore Hope in Somalia and the conflict in Bosnia. There is no other comparable system in the inventory which offers the ballistic protection, transportability and mobility of the ASV. Congress directed FY 1995 funding for this program under PE 0604328D to insure all Services' needs were met. A joint service memorandum is in place. In FY 1996, Project DE41 also includes funding for the HMMWV Extended Service Program (ESP). The Program Executive Office, Tactical Wheeled Vehicles initiated the Joint Army/Marine Corps HMMWV ESP program in FY 1995. FY 1996 funding will continue this previous effort, thus enabling procurement of vehicles with updated design, which will allow insertion of evolving performance requirements and extend the service life of the vehicle another 14 years. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy for ASV awarded one prototype contract (Dec 95), which leads to a non-competitive award of a four-year production contract in FY 1997. The acquisition strategy for the HMMWV ESP is to develop a remanufacture package.

FY 1996 Accomplishments:

- 1606 Prototype Contract (ASV)
- 624 Government Engineering/Quality Support (ASV)
- 294 Pre-Production Qualification Test (PPQT) (ASV)
- 1446 Initiate Remanufacture Package (HMMWV ESP)
- Total 3970

FY 1997 Planned Program: Program not funded in FY 97

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

Project DE41

Page 5 of 7 Pages

Exhibit R-2 (PE 0604642A)

747

Item 78

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle			DE41
B. Project Change Summary					
FY 1997 President's Budget		FY 1996	FY 1997	FY 1998	FY 1999
Appropriated Value		4073			
Adjustments to Appropriated Value		4187			
FY 1998 Pres Bud Request		-217			
		3970			
C. Other Program Funding Summary					
OPA1 Armored Security Vehicle (D02800)		FY 1996	FY 1997	FY 1998	FY 1999
			18230	9470	8877
					7052
D. Schedule Profile					
Initiate Remanufacture Package (HMMWV ESP)		FY 1996		FY 1997	FY 1998
PPQT Testing (ASV)		1	2	3	2
Release Production Request For Proposal (ASV)			4	4	3
Production Contract Award (ASV)			X*	1	2
					4
</					

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

PROJECT

DE41

A. Project Cost Breakdown

Product Development	FY 1996	FY 1997	FY 1998	FY 1999
Developmental Testing	3676			
Total	294			
	3970			

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government	Method/Type	Award or	Performing	Total
Performing	or Funding	Obligation	Activity	Prior to
Activity	Vehicle	Date	EAC	FY 1996

Project Office EAC

FY 1996

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Product Development Organizations

TEXTRON (ASV FFP Dec 95

Prototype)

In-House/Eng

TACOM, MI

AM General

(Reman Pkg)

HMMWV ESP

Support and Management Organizations

N/A

Test and Evaluation Organizations

TECOM (APG)

Government Furnished Property - None

Total				
Prior to				
FY 1996				

294

FY 1997

FY 1998

FY 1999

Budget to Complete

294

Total Program

3676

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

FY 1996				
FY 1997				
FY 1998				
FY 1999				

3676

FY 1997

FY 1998

FY 1999

Budget to Complete

294

Total Program

3970

Project DE41

Page 7 of 7 Pages

Exhibit R-3 (PE 0604642A)

749

Item 78

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604645A Armored Systems Modernization (ASM)
- Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	32425	6585	0	0	0	0	0	33338	Continuing	Continuing
D022 Future Scout Vehicle (FSV)	0	0	0	0	0	0	0	33338	Continuing	Continuing
D175 Advanced Field Artillery System Multi-Option Fuze	6058	6585	0	0	0	0	0	0	0	36159
D413 Armored Gun System (AGS)	26367	0	0	0	0	0	0	0	0	269476

Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Advanced Field Artillery System (AFAS) Multi-Option Fuze for Artillery (MOFA), Armored Gun System (AGS) and the Future Scout Vehicle (FSV). MOFA will provide proximity, time delay and point detonation functions for 105mm and 155mm bursting projectiles. The AGS is a strategically deployable, tactically transportable, lightly armored, highly mobile, direct fire weapon system. The FSV will replace the current ground scout systems in the battalion/brigade and division/regiment levels. The projects in this program element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)
- Engineering Development

D175

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D175 Advanced Field Artillery System Multi-Option Fuze	6058	6585	0	0	0	0	0	0	0	36159

A. Mission Description and Justification: Crusader is the Army's next generation 155mm self-propelled howitzer system that will provide a significant increase in artillery survivability, mobility and operational capability and effectiveness through utilization and integration of advanced technology in its subsystems and combat components. This project finances the Engineering and Manufacturing Development phase of MOFA. MOFA will provide proximity, delay, time and point detonation functions for 105mm and 155mm bursting projectiles. MOFA will be inductively (or manually) set contributing to Crusader's critical automated ammunition handling capability, allowing Crusader to meet rate of fire (10-12 rounds/min) and autonomous operations requirements.

FY 1996 Accomplishments:

- 4980 Final hardware design, integration and build
- 568 Program management, management engineering services
- 510 Qualification testing/development and operational testing
- Total 6058

FY 1997 Planned Program:

- 4076 Design enhancements and updates, production readiness review
- 750 Program management, management engineering services
- 1598 Continuation of Developmental and Operational testing, completion of qualification testing and type classification testing
- 161 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs
- Total 6585

FY 1998 Planned Program: Project not funded in FY 98**FY 1999 Planned Program:** Project not funded in FY 99

Project D175

Page 2 of 9 Pages

Exhibit R-2 (PE 0604645A)

751

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
5 - Engineering and Manufacturing Development		0604645A Armored Systems Modernization (ASM) - Engineering Development						February 1997	D175
B. Project Change Summary		FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999		
FY 1997 President's Budget		6215	6726	0	0				
Appropriated Value		6388	6585						
Adjustments to Appropriated Value		-330							
FY 1998 President's Budget Request		6058	6585	0	0				
C. Other Program Funding Summary		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
RDTE, A Budget Activity 4 PE 603645, Project D409 - AFAS		135724							
Ammo, A Appropriation ER8017 MOFA Production				6056	30890	59040	59950	61192	119200
RDTE, A Budget Activity 4 PE 603854, Project D505 Crusader - AD		235795	322291	293920	47102				
D. Schedule Profile		FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	FY 1999	Total Cost
Acquisition Milestones (AM)		1	2	3	4	1	2	3	4
AM - Hardware Delivery (PPQT)									
T&E Milestones - Pre-Production			X*						
Qualification Test (PPQT)									
T&E Milestones - Baseline Design									
Testing									
Contract Completion (Task V)									
Type Classification I									
* Milestone completed									

Project D175

Page 3 of 9 Pages

Exhibit R-2 (PE 0604645A)

752

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

D175

- Engineering Development

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	4980	4076		
Support and Management	568	750		
Test and Evaluation	510	1598		
SBIR/STTR		161		
Total	6058	6585		

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Alliant Tech Sys	CPIF	May 92	20233	20331	14023	2766	2500			0	19389
Hopkins, MN					1788					0	1788
Raytheon/TI Joint Ventures,	SS-CPFF	Mar 94									
Twesbury, MA					4412	2214	1415			0	8102
AMCCOM,											
ARDEC, Dover,											
NJ; Adelphi, MD							161				
SBIR/STTR											
Support and Management Organizations					2347	568	750			0	3665
AMCCOM,											
ARDEC, Dover											
NJ; Adelphi, MD											
Test and Evaluation Organizations					946	510	1598			0	3054
TECOM, Yuma,											
AZ, APG, ARL,											
ARDC, HAFB											

Project D175

Page 4 of 9 Pages

Exhibit R-3 (PE 0604645A)

753

Item 79

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604645A Armored Systems Modernization (ASM) D175

- Engineering Development

Government Furnished Property: None

Total

Prior to

FY 1996

20223

2347

946

23516

FY 1996

4980

568

510

6058

FY 1997

4076

750

1598

6585

FY 1998

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Budget to

Complete

Total

Program

1

1

Project D175

Page 5 of 9 Pages

Exhibit R-3 (PE 0604645A)

754

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

D413

- Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D413 Armored Gun System (AGS)	26367	0	0	0	0	0	0	0	0	269476

A. Mission Description and Justification: The Armored Gun System (AGS) is a strategically deployable, tactically transportable, lightly armored, highly mobile, direct fire weapon system. The AGS will support light infantry forces in offensive and defensive operations, low and mid intensity conflicts. The AGS will be employed during contingency force operations; therefore it must be capable of insertion via low velocity air drop (LVAD) and execute forced entry operations. Its role is to support infantry units in direct fire mode for point fire target destruction, generally against bunkers, threat medium armor systems, buildings, and in Military Operations in Urban Terrain. System capabilities include C-130 LVAD (Level I Armor), Roll-on/Roll-off C130/C141 (Level II Armor), Roll-on/Roll-off C-17 (Level III Armor), 105mm main gun (XM35) with autoloader, 3 man crew, fire control equivalent to M1 and mobility with Level III armor greater than the M551 Sheridan. The Army terminated the AGS program because of changing Research Development and Acquisition (RDA) priorities and budgetary pressures.

Acquisition Strategy: The AGS program was terminated. The funding in FY 1996 will be used for an orderly close-out of the program.

FY 1996 Planned Program:

- 22450 EMD
- 456 Technical Testing phase-out
- 236 Vulnerability Testing Completion
- 3225 Project Management
- Total 26367

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
32758	0	0	0
33677			
-7310			
26367	0	0	0

Project D413

Page 6 of 9 Pages

Exhibit R-2 (PE 0604645A)

755

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604645A Armored Systems Modernization (ASM)
- Engineering Development

PROJECT

D413

Change Summary Explanation: Funding: In FY 96 (-7310) funds were reprogrammed to higher priority programs.

C. Other Program Funding Summary: NoneD. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete Vulnerability Testing																

* Milestone Completed

Project D413

Page 7 of 9 Pages

Exhibit R-2 (PE 0604645A)

756

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

PROJECT

D413

- Engineering Development

A. Project Cost Breakdown

Prototype Design, Mfg & Support	FY 1996	FY 1997	FY 1998	FY 1999
XM35 Gun Design, Mfg, & Support	6132			
Government Testing	1105			
Training Devices	823			
	50			
Program Management	3225			
Other Govt Support	181			
EMD Termination	14851			
Total	26367			

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government	Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
United Defense LP	SS/CPIF	Jun 92	TBD	215472	190969	19254				0	210223
San Jose, CA											
SAAAB Tng Sys	FFP	Sep 94	4605	4605						0	4605
Huskvarna, Swed											
Misc Govt Agcy	MIPR				10207	2174				0	12381
Support and Management Organizations											
PM AGS Warren, MI	MIPR				7884	3225				0	11109
Miscellaneous											
MIPR					1955	181				0	2136
Test and Evaluation Organizations											
ATC APG, MD	MIPR				8487	699				0	9186
Misc Govt Agcy	MIPR				2471	124				0	2595

Project D413

Page 8 of 9 Pages

Exhibit R-3 (PE 0604645A)

757

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

D413

- Engineering Development

Government Furnished Property:

Contract

Method/Type

Award or

or Funding

Delivery

Vehicle

Date

Date

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to
CompleteTotal
Program

Product Development Property

XM35 Gun MIPR

Nov 92

Aug 91

11068

0

0

0

0

0

11068

Support and Management Property

XM35 Gun MIPR

480

3592

Test and Evaluation Property

XM35 Gun MIPR

230

2581

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

216849

12951

13309

243109

21428

3886

1053

26367

238277

16837

14362

269476

Project D413

Page 9 of 9 Pages

Exhibit R-3 (PE 0604645A)

758

Item 79

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19114	46705	56196	63069	58914	39210	19294	0	0	343859
DG15 TRACTOR CARD	219	0	415	1492	0	0	0	0	0	2126
DG25 M1 Breacher	6501	34102	43748	51420	58745	39210	19294	0	0	253020
DG26 Heavy Assault Bridge	12394	12603	12033	10157	169	0	0	0	0	88674

Mission Description and Budget Item Justification: This Program Element (PE) supports the development of new, advanced combat engineer systems that will have mobility characteristics comparable to the maneuver forces supported. Two programs are included in the PE: the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The base for both vehicles is an M1 Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven excavating arm, and an armored commander's control station on the chassis. The Wolverine will integrate a bridge capable of supporting Military Load Class (MLC) 70 loads and a software controlled launching mechanism. All projects in this PE support efforts in the Engineering and Manufacturing Development (EMD) phase of the life cycle acquisition strategy, and are correctly located in Budget Activity 5.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604649A Engineer Mobility Equipment Development								DG25	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG25	M1 Breacher	6501	34102	43748	51420	58745	39210	19294	0	0	253020
<p>A. Mission Description and Justification: The Grizzly (M1 Breacher) will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and be as survivable as, the force it is supporting. It will provide the maneuver force with the freedom required to successfully execute assigned ground combat mission requirements. Funding in this phase will support vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision; and in addition, will support the development of Grizzly training devices.</p> <p>Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications have been written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly will meet the mission profile required by the Operational Requirements Document. Through the production buy the vehicle will be sole sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production will be awarded by STRICOM with maximum use on existing commercial off-the-shelf hardware and software.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 815 Prepared Grizzly EMD Contract • 1205 Provided Government and Contractor Program Management and Systems Engineering • 4481 Conducted EMD Design Refinement and Logistics Development Efforts Total 6501 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 22760 Perform Design Refinement and Prototype Refurbishment • 4271 Conduct Logistics Analysis, Component Testing and Simulation • 6238 Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetrionics, Digitization and Logistics Support Analyses • 833 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs Total 34102 											

Project DG25

Page 2 of 11 Pages

Exhibit R-2 (PE 0604649A)

760

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment

DG25

Development

FY 1998 Planned Program:

•	21961	Complete EMD Vehicle Design and Rebuild Two Prototype Vehicles
•	8413	Perform Component Testing and Simulation and Accomplish Program Logistics Requirements
•	468	Procure System Support Package
•	9452	Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetronics, Digitization and Logistics Support Analyses
•	3454	Begin Design of Grizzly Training Devices
	Total	43748

FY 1999 Planned Program:

•	6920	Conduct Production Qualification Test I and Limited User Test
•	13490	Perform Component Testing and Simulation and Accomplish Program Logistics Requirements
•	16152	Continue Refinement of Design to Support Vehicle Production Configuration
•	11891	Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetronics, Digitization and Logistics Support Analyses
•	2967	Complete Design of Training Devices
	Total	51420

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	10619	33337	20032	8530
Appropriated Value	10918	34102		
Adjustments to Appropriated Value	-4417			
FY 1998 President's Budget Request	6501	34102	43748	51420

Change Summary Explanation:

Funding: Decreased funding in FY 1996 (-3999) was a result of extending the Demonstration and Validation phase of the program and congressional adjustments (-418).

Additional funding in FY 1998 (+23716) and FY 1999 (+42890) supports live fire test requirements, simulator development, test vehicle costs, and unit cost reduction efforts.

Schedule: The EMD phase was extended approximately 28 months to mitigate risk in system design maturation.

Project DG25

Page 3 of 11 Pages

Exhibit R-2 (PE 0604649A)

761

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

DG25

C. Other Program Funding Summary

RDTE, A Budget Activity 4
 PE 0603649A, Project DG24, M1 Breacher AD
 PA, WTCV, GZ3200, Breacher MOD
 PA, WTCV, G84000, Breacher Trng Dev
 PA, WTCV, GEO175, Breacher Spares

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	13591			10444	10964	83399	86313	125900	Cont'd	71128
						397	15726	1527	Cont'd	17650
							2334	2666	Cont'd	Cont'd

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
1	2	3	4	1	2	3	4	1	2	3
				X*						

Conduct Milestone II Review
 Award Engineering and Manufacturing Development (EMD) Contract
 EMD Preliminary Design Review (PDR)
 EMD Critical Design Review (CDR)
 Begin Prototype Rebuild
 Begin Pre-Production Qualification Test (PQT) 1

FY 1996
 2 3 4
 X*

FY 1997
 2 3 4
 X*

X

X

X

* Milestone Completed

Project DG25

Page 4 of 11 Pages

Exhibit R-2 (PE 0604649A)

762

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment

DG25

Development

A. Project Cost Breakdown

Development Engineering	FY 1996	FY 1997	FY 1998	FY 1999
Logistics Support	3773	22760	25415	19119
System Test & Evaluation	638	4079	7067	11958
System Management	70	192	1814	8452
SBIR/STTR	2020	6238	9452	11891
Total	6501	34102	43748	51420

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
United Defense York, PA	SS-CPFF	Jan 97	NA	128986		5312	25768	35142	34976	27788	128986
United Defense York, PA	SS-CPFF	Apr 00	NA	64316						64316	64316
General Dynamics Land Sys (GDLS), Warren, MI	SS-CPFF	Dec 96	NA	5313		100	3503	400	1310		5313
Unk (simulator)	Competitive-Cost Plus	Jan 98	Unknown	5715				3074	2641	0	5715
Other Contracts	Various	Various	NA	910		345	200	150	130	430	1255
<u>Support and Management Organizations</u>											
TACOM						553	2280	2609	3001	1797	10240
Warren, MI						61	1108	1785	1602	508	5064
Other Gov't Agencies											

Project DG25

Page 5 of 11 Pages

Exhibit R-3 (PE 0604649A)

763

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment
Development

DG25

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contract Spt to Program						130	410	120	840	310	1810
SBIR/STTR							833				833
Test and Evaluation Organizations											
TECOM									6790	21970	28760
APG, MD											
Government Furnished Property											
Contract											
Method/Type											
or Funding											
Vehicle											
Award or											
Obligation											
Date											
Delivery											
Date											
Jun 97											
Mar 97											
Requisition											
System Support											
Package											
Subtotal Product Development						5757	29471	38766	39057	92534	205585
Subtotal Support and Management						744	4631	4514	5443	2615	17947
Subtotal Test and Evaluation								468	6920	22100	29488
Total Project						6501	34102	43748	51420	117249	253020

Project DG25

Page 6 of 11 Pages

Exhibit R-3 (PE 0604649A)

764

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604649A Engineer Mobility Equipment

Development

PROJECT

DG26

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG26 Heavy Assault Bridge	12394	12603	12033	10157	169	0	0	0	0	88674

A. Mission Description and Justification: The Wolverine will provide Military Load Class (MLC) 70 vehicles the capability to cross 24-meter gaps (26-meter bridge). The Wolverine will have mobility characteristics comparable to the maneuver forces it will support. The launch time for the bridge will be five minutes or less; the retrieval time will be a total of ten minutes or less which includes five minutes to engage plus five minutes to place the vehicle in a travel mode. The base for the Wolverine is an M1A2 Abrams Tank chassis. The Wolverine simulator is an institutional operator training system (near term implementation) and will evolve into a future unit collective training system (mid to far term) implementation. Five institutional operator simulator systems will be located and housed at Ft. Leonard Wood to accomplish Advanced Individual Training (AIT) for the Military Occupational Specialty (MOS) 12B Combat Engineer on Wolverine driver/operator mission functions. Each simulator system will have the capability to train two Wolverine crews (4 MOS 12Fs) concurrently. The simulators will optimize training effectiveness at reduced institutional OPTEMPO costs.

Acquisition Strategy: Side-by-side Demonstration Testing was completed in FY 1993 on three different prototype bridges and launchers for Phase I of Engineering and Manufacturing Development (EMD). As a result of the testing and submission of proposals, one contractor, General Dynamics Land Systems Division (GDLS), was selected to complete Phase II of EMD with a Cost-Plus-Award-Fee contract. A contract was awarded in FY 1996 for 2 Wolverine systems with an option for four additional systems that will complete development testing. Follow-on Fixed Price contracts will be awarded for LRIP and Production requirements. STRICOM will award contracts for the development of training devices. It is planned that the contractor will develop simulators for both Wolverine and the Grizzly. Maximum use will be made of existing software from M-1 Tank Driver Trainer and actual system vehicle dynamics and operation software.

FY 1996 Accomplishments:

- 7657 Continued EMD Phase II Contract; Completed Prototype Build; Completed Contract Testing and Supported Government Testing
- 2600 Continued Developmental Contract
- 119 Awarded Various Engineering Services Contracts
- 2018 Performed Program Management; Conducted Logistics Demonstration, Started PPQT
- Total 12394

FY 1997 Planned Program:

- 10222 Engineering Development Contract for Migration to System Enhancement Program and Test Program Sets (TPS) development
- 2073 Complete EMD II Contract
- 308 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 12603

Project DG26

Page 7 of 11 Pages

Exhibit R-2 (PE 0604649A)

765

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment
Development

DG26

FY 1998 Planned Program:

- 400 Contractor Support For Test
- 1600 Developmental Contract
- 287 Program Management
- 6698 Start Live Fire Test and Purchase System Support Package
- 335 Award Design for Training Device Contract and Provide Government Program Management
- 2713 Begin Design of Simulator
- Total 12033

FY 1999 Planned Program:

- 800 Contractor Support of Test
- 1000 Developmental Contract and Refurbishment of Test Vehicles
- 298 Program Management
- 5438 Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E
- 288 Provide Government Program Management for Training Devices
- 2333 Complete Design of Simulator
- Total 10157

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	12714	2073	4548	8191
Appropriated Value	13071	12603		
Adjustments to Appropriated Value	-677			
FY 1998 President's Budget Request	12394	12603	12033	10157

Change Summary Explanation:

Funding: Increase in FY 1997 reflects a congressional increase of 9300 for migration to Abrams System Enhancement Program (SEP) and 1230 for Test Program Sets development. Increase in FY 1998 (7485) and FY 1999 (1966) for Live Fire Test requirements and the inclusion of the Wolverine training device R&D funding.

Project DG26

Page 8 of 11 Pages

Exhibit R-2 (PE 0604649A)

766

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604649A Engineer Mobility Equipment
Development

PROJECT

DG26

C. Other Program Funding Summary

PA, WTCV, GZ3250, HAB MOD
 PA, WTCV, GE0177, HAB Spares
 PA, WTCV, G84600 HAB Training Devices

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	14611	51322	42205	51950	71190	90110	111467	122511	Cont'd	Cont'd
			930	887	1416	1475	1864	2191	Cont'd	18534
				398	15723	1313	1100			

D. Schedule Profile

1 2 3 X*
 FY 1996

FY 1997
 2 3

FY 1998
 2 3

FY 1999
 2 3

4

Begin Prod. Qualification Testing (PQT)

Award of 6 Test Vehicles

End PQT Testing

Milestone IIIa

LRIP Contract Award

Award of Contract for Test Vehicles

Begin Live Fire/Vulnerability Test

End Live Fire/Vulnerability Test

Begin PVT

Begin IOT&E

End PVT

* Milestone Completed

Project DG26

Page 9 of 11 Pages

Exhibit R-2 (PE 0604649A)

767

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

DG26

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Development Engineering	9711	12150	3642	2256
Logistics Support	666	145	640	550
System Test & Evaluation	1280		7129	6765
System Project Management	737		622	586
SBIR/STTR		308		
Total	12394	12603	12033	10157

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Gen Dyn Land Sys	C-CPAF	Jan 94	NA	36420	26690	7657	2073				36420
Sterling Hgts, MI											
Gen Dyn Land Sys	SS-CPFF	Feb 96	NA	NA	2600	10222	2000				16122
Sterling Hgts, MI											
SMS Corp	SS-FFP	May 92	NA	NA	5798						5798
St. Louis, MO											
Unknown (Training Devices)	Competitive-Cost Plus	Jan 98	NA	5046				2713	2333	0	5046
Other Contracts	Various	Various	NA	NA	753	119					872
Support and Management Organizations											
PMO Support					5267	727		287	298		6579
ANAD					396						396
Anniston, AL											
SBIR/STTR							308				308
PM STRICOM	MIPR	Oct 97						335	288	169	792

Project DG26

Page 10 of 11 Pages

Exhibit R-3 (PE 0604649A)

768

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DG26

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment
Development

Contractor or Government Performing Activity		Contract Method/Type or Funding Vehicle		Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Other Gov't Agencies							1375	10					1385
Test and Evaluation Organizations													
TECOM							635	1247			5738		7620
APG, MD													
AMSAA										5150			5150
APG, MD													
WSMR							25				200		225
White Sands, NM													
Government Furnished Property													
		Contract											
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program			
Product Development Property													
Various Gov't Sources	MIPR	Various	Various	379	1					380			
Test and Evaluation Property													
To Be Determined	MIPR	Apr 96	Jun 96		33		1548			1581			
Subtotal Product Development													
Subtotal Support and Management													
Subtotal Test and Evaluation													
Total Project													

Project DG26

Page 11 of 11 Pages

Exhibit R-3 (PE 0604649A)

769

Item 80

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37658	34870	33456	21255	21817	18692	27214	17414	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	27872	18036	11477	0	0	0	0	0	0	95765
DL70 Night Vision Devices Engineering Development	9786	9283	9981	11277	21817	18692	27214	17414	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	0	7551	11998	9978	0	0	0	0	0	29527

Mission Description and Budget Item Justification: This program element provides night vision technologies required for U.S. defense forces to engage enemy forces twenty-four hours a day under conditions with degraded visibility due to darkness, adverse weather and battlefield obscurants. Developments and improvements to high performance night vision electro-optics, laser, thermal and radar systems and systems integration of related multi-sensor suites will enable near to long range target identification, acquisition and engagement as well as improve battlefield command and control in "around the clock" combat operations. Project DL69 is focused on inserting key thermal sensor technology into common battle groups. Project DL70 focuses on a variety of night vision electro-optical equipment for use by individual soldiers and a variety of other systems such as a Synthetic Aperture Radar (SAR), Moving Target Indicator (MTI) radar and the Target Location Observation System (TLOS). Project DL74 focuses on a long range multi-sensor system utilizing Horizontal Technology Integration Second Generation Forward Looking Infrared (FLIR) (HTI SGF) thermal sensors and other technologies, for use by US Army scouts. The projects in this PE support development efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL69

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	27872	18036	11477	0	0	0	0	0	0	95765

A. Mission Description and Justification- Horizontal Technology Integration Second Generation Forward Looking Infrared (FLIR) (HTI SGF) will enable the Army to insert key thermal sensor technology into the highest priority forces [the M2A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), and the M1A2 Abrams]. The HTI SGF will allow all vehicles in a common battle group to see the same thermal image. The HTI SGF development is in two parts, an "A" kit, which is specific to the vehicle, and includes integration and installation, and a "B" kit, which includes the common FLIR sensor and display. Funds in this project will develop the "B" kit. In addition, Aviation B Kit capabilities will be demonstrated to meet FY 1997 Congressional direction.

Acquisition Strategy: The common Second Generation FLIR sensor and display "B" Kit is being developed and fabricated using a competitively awarded cost plus award fee contract.

FY 1996 Accomplishments:

- 25895 Continued development, fabrication of "B" Kit, integration kits and pilot line.
- 810 Initiated sight level qualifications (contractor technical testing) of EMD prototypes for HTI SGF.
- 1167 Performed qualification testing of EMD "B" kit prototypes.
- Total 27872

FY 1997 Planned Program:

- 12317 Complete development and fabrication of "B" kit for M1A2 and M2A3.
- 286 Complete sight level qualification testing of EMD prototypes for HTI SGF.
- 5000 Fabricate prototype Aviation B Kit for demonstration
- 433 Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
- Total 18036

Project DL69

Page 2 of 15 Pages

Exhibit R-2 (PE 0604710A)

771

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604710A Night Vision Systems - Engineering Development		February 1997	DL69
FY 1998 Planned Program:					
•	409	Support M1A2 Vehicle Testing.			
•	408	Support BFVS Vehicle Testing.			
•	8410	Fabricate "B" Kits for LRAS3 test units.			
•	2250	Finalize Ground HTI "B" Kit Interface Control Document and final specifications.			
Total	11477				
FY 1999 Planned Program: No planned program					
B. Project Change Summary					
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999	
Appropriated Value	28584	13443	3317	0	
Adjustments to Appropriated Value	28873	18036			
FY 1998 Pres Bud Request	-1001				
	27872	18036	11477	0	
Change Summary Explanation: Funding: FY 1998 adjustments due to Army Science Board efficiency reductions (-223) and for proper funding of LRAS3 LRIP units (+7937).					
C. Other Program Funding Summary					
6.4 RDTE 0604710A, A Kit LRAS3 (DL74)	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
6.7 RDTE 0203735A, A Kit (D330)	0	7551	11998	9978	0
LRAS3 K38300 OPA2	22438	38113	3599	0	0
WTCV G80717 M2A3 Bradley "B" Kit	0	0	0	37567	45473
WTCV GA0700 M1 Abrams A and "B" Kit	0	25752	16409	53407	53645
WTCV GA0750 Abrams Upgrade A and "B" Kit	0	0	0	0	11491
		22951	73926	103228	87381
					61603
					35658
					39401
					Cont
					Cont
					Cont
					Cont
The 0203735A program element funds the "A" kit portion of the HTI SGF development, for the M1 Abrams Tank. WTCV funds the production tails for these platforms.					
Total Cost 29527 144042 Cont Cont Cont Cont Cont					

Project DL69

Page 3 of 15 Pages

Exhibit R-2 (PE 0604710A)

Project DL69

Page 3 of 15 Pages

Exhibit R-2 (PE 0604710A)

772

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604710A Night Vision Systems - Engineering Development

PROJECT

DL69

D. Schedule Profile

	FY 1996			FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Developmental Testing for M2A3 Vehicle				X*								
"B" Kit Initial Qualification				X*								
M1A2 sight Qualification				X*								
Special In-Process Review for B Kit												
Initiate M2A3 Limited User Test					X							
Low Rate Initial Production M2A3												
Support M1A2 Vehicle Testing									X			
Support BFVS Vehicle Testing									X			
Finalize ICD and Specs for Ground HTI												
"B" Kit												
Aviation B Kit Fabrication												
Aviation B Kit Integration into AH-64 (platform funded)								X				
Aviation B Kit Flight Demo (platform funded)										X		

*Milestone Completed

Project DL69

Page 4 of 15 Pages

Exhibit R-2 (PE 0604710A)

773

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL69

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	25872	16161	10916	0
Government Engineering Support	1543	981	395	0
Project Management Support	457	461	166	0
SBIR/STTR		433		
Total	27872	18036	11477	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations	Various	March 94	3876	3876	3876	0	0	0	0	0	3876
Contracts											
Texas Instruments, McKinney, TX	C/CPAF	July 94	70401	70401	28124	22232	9203	10842	0	0	70401
SADA II, SBRC	C/FP	March 96	2116	2116	0	2116	0	0	0	0	2116
T&M Hughes, El Segundo, CA	SS/T&M	July 96	3556	3556	0	1524	1958	74	0	0	3556
Lockheed Martin, Orlando, FL	CPFF	February 97	5000	5000	0	0	5000	0	0	0	5000

Support and Management Organizations

Project Mgmt											
ASARC Support	MIPR				856	457	461	166	0	0	1940
CECOM NVESD	MIPR				250	0	0	0	0	0	250
SBIR/STTR					5274	1543	981	395	0	0	8193
							433				433

Test and Evaluation Organizations: None. Technical/qualification tests are performed by contractor and all Operational Tests are funded by Host platforms.

Government Furnished Property: None

Project DL69

Page 5 of 15 Pages

Exhibit R-3 (PE 0604710A)

774

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
5 - Engineering and Manufacturing Development	0604710A Night Vision Systems - Engineering Development			DL69	
	Total				
	Prior to				
	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
	38380	27872	18036	11477	
					Budget to Complete
					95765
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project	38380	27872	18036	11477	95765

Project DL69

Page 6 of 15 Pages

Exhibit R-3 (PE 0604710A)

775

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604710A Night Vision Systems - Engineering Development

PROJECT

DL70

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL70 Night Vision Devices Engineering Development	9786	9283	9981	11277	21817	18692	27214	17414	Continuing	Continuing

A. Mission Description and Justification: Night Vision Devices Engineering Development: This project develops and improves high performance night vision electro-optics, thermal and laser systems, and systems integration of related multi-sensor suites to enable near to long range target acquisition and engagement as well as improve battlefield command and control in "around-the-clock" combat operations. Near term systems in development are: Thermal Weapon Sight (TWS) Pre-planned Product Improvements (P3I) - TWS a forward looking infrared (FLIR) used for surveillance and fire control with individual and crew served weapons. The TWS with P3I is a part of the Land Warrior program, and supports crew-served weapon applications. The TWS P3I module is an eyesafe laser rangefinder (LRF) with compass/vertical angle measurement (C/VAM) and ballistic calculation and adjustment. Target Location Observation System (TLOS) - an active/passive day/night sight for individual soldiers to detect Optical and Electro Optical threat, can be used as a covert illuminator and fire direction pointer. Driver's Vision Enhancer (DVE) - a thermal imaging device used for driving combat, combat service, and combat support vehicles and allows drivers to see obstacles through fog and battlefield obscuration. The DVE P3I will enhance the image quality for the driver by optimizing the interaction between the driver, sensor and environmental observables, and will incorporate an image intensifier (I2) channel in order to provide the driver with the optimum image in all weather conditions. Lightweight Laser Designator/Rangefinder (LLD/R) - a day/night manportable laser designator/rangefinder capable of designating vehicle targets out to 5km and ranging targets out to 9995 meters and processing target location data for export through a digital interface. Integrated Sensor Suite (ISS) programs will provide the structure for interoperability of sensors to include: MELJOS, LLD/R, TLOS, LVRs, TWS, DVE, LRAS-3, Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), FLIR, visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars. This will facilitate the merging of existing sensor data for digital distribution within the Army's Technical Architecture (ATA). Continue development and evaluation of multispectral (infrared and visual) target acquisition capabilities to be incrementally inserted into ongoing production efforts (TLOS, LRAS-3 and other laser systems).

Acquisition Strategy: The several programs under development in this line (i.e., TWS, TLOS, LLD/R, DVE and ISS) are based on competitively awarded cost plus incentive fee contracts.

FY 1996 Accomplishments:

- 1194 Integrated commercial off-the-shelf (COTS) components and evaluated as potential upgrades to TLOS program.
- 873 Conducted TLOS P3I studies.
- 1319 Conducted operational evaluation of TWS P3I that incorporates a Laser Rangefinder.
- 1168 Initiated development for DVE P3I prototypes.
- 1766 Continued development of LLD/R engineering prototype.
- 3466 Initiated an ISS utilizing MTI radar, FLIR and daylight imagers for use on remotely controlled airships and other airborne platforms.
- Total 9786

Project DL70

Page 7 of 15 Pages

Exhibit R-2 (PE 0604710A)

776

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

FY 1997 Planned Program:

- 573 Complete development of TLOS-related prototypes incorporating results from COTS evaluation and studies.
- 900 Conduct HTI Laser trade studies to support developmental/COTS/NDI Integration program
- 2203 Complete development of DVE P3I prototypes.
- 1428 Provide TWS support to Land Warrior program and complete P3I efforts.
- 2146 Conduct limited user test on engineering prototype LLDR, Award LLDR EMD contract.
- 1819 Conduct Integration and Demonstration of the ISS.
- 214 Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
- Total 9283

FY 1998 Planned Program:

- 3920 Develop and integrate LLDR EMD models.
- 4040 Conduct ISS integration, test and evaluation to include data dissemination for multiple applications.
- 2021 Continue development and evaluation of multispectral target acquisition capabilities
- Total 9981

FY 1999 Planned Program:

- 3800 Conduct technical tests and user operational evaluation of LLDR EMD models.
- 4207 Continue ISS integration and technical tests.
- 3270 Prepare to transition identified multispectral target acquisition capabilities
- Total 11277

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996 10029

10130

-344

9786

FY 1997

12482

9283

9283

FY 1998

11304

141813

141813

FY 1999

16256

141979

11277

Change Summary Explanation: Funding: FY 1998 and FY 1999 adjustments due to Army Science Board efficiency reductions (FY 98 -1323/FY 99 -4979).

C. Other Program Funding Summary

Night Vision Devices KA3500 OPA2

FY 1996

83726

FY 1997

164862

FY 1998

85312

FY 1999

83805

FY 2000

141813

FY 2001

141979

FY 2002

149915

FY 2003

148841

Total

Cost

Continue

Project DL70

Page 8 of 15 Pages

Exhibit R-2 (PE 0604710A)

777

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

PROJECT

DL70

D. Schedule Profile

<u>D. Schedule Profile</u>	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete TWS user test (IOTE)																
TWS Milestone III Production decision																
TWS Full Production competitive award																
Initiate DVE Enhancements		X*														
Initiate DVE Enhancements DT/OT			X*													
DVE Milestone III IPR						X										
Initiated TLOS P3I FLIR finder	X*															
Demonstrator																
Complete TLOS related prototypes						X										
Initiate HTI Laser Trade Studies							X									
Award Multispectral Target Acquisition										X						
LLDR Limited User Evaluation							X									
LLDR Milestone I/II IPR						X										
LLDR EMD Award							X									
LLDR EMD Integration										X						
LLDR Technical Test														X		
LLDR User Operational Tests																
Conduct HTI Laser NDI system user evaluation										X						
Initiate ISS Integration			X*													
Initiate ISS Test, Evaluation & Demonstration					X											
ISS Data Dissemination Evaluation														X		
Conduct ISS Technical Tests															X	
*Milestone Completed																

Project DL70

Page 9 of 15 Pages

Exhibit R-2 (PE 0604710A)

778

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	5318	5073	7450	8250
Contractor Engineering / Trade Studies	873	900	0	0
Government Engineering Support	528	458	471	551
Project Management Support	352	300	325	325
Test and Evaluation	2715	2338	1735	2151
SBIR/STTR		214		
Total	9786	9283	9981	11277

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organization											
Hughes Aircraft Co., El Segundo, CA	C/CPIF	Dec 90	42490	42490	42490	0	0	0	0	0	42490
Lockheed-Sanders, Nashua, NH	C/CPIF	Feb 92	18769	18769	18769					0	18769
Magnavox, Mahwah, NJ	C/CPIF	Aug 93	8321	8321	7571	250	500			0	8321
Texas Instruments, McKinney, TX	C/CPIF	Aug 93	11524	11524	10774	250	500			0	11524
Various (Studies and Prototypes)	C/CPIF	3Q96				2591	573				3164
Litton Laser, Apopka, FL	C/CP	Aug 95			1556	1000	0			0	2556
LLDR (TBS)	C/CP	2Q97				0	1800	3500	3050	750	9100

Project DL70

Page 10 of 15 Pages

Exhibit R-3 (PE 0604710A)

779

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Nichols Research, Huntsville, AL	C/CPIF	2Q96		700	0	100	200	200	200	0	700
(ISS Integration)											
HTI Laser Trade	C/CP	3Q97					900			0	900
Studies (TBS)											
Multispectral	C/CPIF	2Q98						1900	3000	Continue	4900
target acq. (TBS)											
EOIR, VA (ISS)	C/CP	2Q97			0	0	750			0	750
California	C/CPIF	Mar 96			0	2000	750			0	2750
Microwave, MD											
ISS (TBS)	C/CP	2Q98			0	0	0	1850	2000	Continue	3850
Support and Management Organizations											
Project Mgmt					2203	352	300	325	325	Continue	3505
CECOM NVESD	MIPR				5585	453	383	396	476	Continue	7293
Other Support	MIPR				2230	75	75	75	75	Continue	2530
SBIR/STTR							214				214
Test and Evaluation Organizations											
OPTEC	MIPR				3739	980	1377	955	1345	Continue	8396
Oth. Gov't Agency	MIPR				0	1735	961	780	806	Continue	4282
Government Furnished Property: None											
Subtotal Product Development					81160	6191	5973	7450	8250	750	109774
Subtotal Support and Management					10018	880	972	796	876		13542
Subtotal Test and Evaluation					3739	2715	2338	1735	2151		12678
Total Project					94917	9786	9283	9981	11277	750	135994

Project DL70

Page 11 of 15 Pages

Exhibit R-3 (PE 0604710A)

780

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering

DL74

Development

COST (in Thousands)	FY 1996 Actual	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	0	7551	11998	9978	0	0	0	0	0	0	29527

A. Mission Description and Justification Project DL74 - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), which is a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine location of potential targets. Currently, US Army scouts do not have the necessary equipment to perform these functions "around the clock." LRAS3 will utilize the HTI SGF thermal sensor and will enable scouts to function "around the clock" in adverse weather and penetrate battlefield obscuration

Acquisition Strategy: This project will pursue a competitive acquisition utilizing best value source selection procedures for the Engineering and Manufacturing Development contract.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program:

- 100 Milestone I/II IPR to acquire 4 prototypes for Development Test (DT), 2 for limited user test, and 10 LRIP units for Operational Test
- 135 Conduct Source Selection Evaluation Board for LRAS3
- 7132 Award EMD contract.
- 184 Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
- Total 7551

FY 1998 Planned Program:

- 4700 Complete EMD prototype development for LRAS3 DT.
- 1273 Conduct DT
- 5000 Fabricate "A" Kits for LRAS3 LRIP.
- 500 Perform operational assessment
- 525 Initiate refurbishment of LRAS3 Prototypes used in DT to support OT.
- Total 11998

Project DL74

Page 12 of 15 Pages

Exhibit R-2 (PE 0604710A)

781

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

PROJECT

DL74

FY 1999 Planned Program:

- 4700 Complete refurbishment of Prototypes and spares for OT and LRP units after OT.
- 4021 Conduct Operational Test.
- 1257 Milestone III/Full Production/Type Classification IPR

Total 9978

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

0

FY 1997

7712

7551

FY 1998

7025

FY 1999

4475

9978

Change Summary Explanation: Funding: FY 1998 and FY 1999 increases are to accelerate funding of LRP test units (FY 98 +4973/FY 99 +5503)

C. Other Program Funding Summary

0603774A D131 Budget Activity 4

6.4 RDTE 0604710A, B Kit (DL69)

LRAS-3 K38300 OPA2

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
	3167	2769	2939	2893	3298	4193	5150	5172	Continue	Cost
	27872	18036	11477	0	0	0	0	0	Continue	95765
	0	0	0	37567	45473	45795	40552	44886	Continue	Continue

D. Schedule Profile

Milestone I/II/LRP IPR

Award EMD Contract

PDR

CDR

Initiate fabrication of test units.

Complete Prototype Development for DT

Conduct Development Test

Initiate Prototype Refurbishment

Conduct Operational Assessment

Complete Refurbishment/Spares for OT

FY 1996

1 2 3

4

1

2

3

4

1

2

3

4

1

2

3

4

Project DL74

Page 13 of 15 Pages

Exhibit R-2 (PE 0604710A)

782

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
5 - Engineering and Manufacturing Development		0604710A Night Vision Systems - Engineering Development								DL74			
<u>D. Schedule Profile</u>		FY 1996		FY 1997		FY 1998		FY 1999					
		1	2	3	4	1	2	3	4	1	2	3	4
Initiate Operational Test													
Complete Refurbishment of LRIP Units													
Milestone III/FP/TC IPR												X	X
Award Production												X	X

Project DL74

Page 14 of 15 Pages

Exhibit R-2 (PE 0604710A)

783

Item 81

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604710A Night Vision Systems - Engineering

DL74

A. Project Cost Breakdown									
	FY 1996	FY 1997	FY 1998	FY 1999				Budget to Complete	Total Program
Primary Hardware Development		7132	11077	6546					24755
Project Management Support		135	141	141					417
Test and Evaluation		0	500	3011					660
Government Engineering Support		100	280	280					184
SBIR/STTR		184							
Total		7551	11998	9978					
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government	Contract								
Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity							
Activity	EAC	EAC							
Product Development Organizations									
TBS	C/CPIF	2Q97							
Support and Management Organizations									
Project Mgmt									
CECOM NVESD	MIPR								
SBIR/STTR									
Test and Evaluation Organizations									
TEXCOM	MIPR								
OPTEC	MIPR								
Government Furnished Property: None									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Exhibit R-3 (PE 0604710A)

Item 81

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16049	76428	55964	43539	31947	31865	34527	32833	Continuing	Continuing
DC40 Unit/Organizational Equipment	3003	1746	1795	1811	1841	2026	2064	2072	Continuing	Continuing
DL40 Clothing and Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Continuing	Continuing
D548 Military Subsistence System	802	792	884	1294	1643	1765	1877	1884	Continuing	Continuing
D667 Land Warrior	0	47893	33031	16965	7664	8892	11204	9388	Continuing	Continuing
D668 Soldier Enhancement Program	10150	21146	14563	14645	14706	14706	14517	14600	Continuing	Continuing
D680 Mounted Warrior	0	0	2007	4494	2501	0	0	0	0	8992

Mission Description and Budget Item Justification: Supports Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of unit/organizational equipment, weapons/munitions, clothing and individual equipment, fabric shelters, field service equipment, food and food service equipment to enhance soldier efficiency, effectiveness, lethality, sustainability and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. The organizational equipment supports development of a new generation of field device support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides "soldier items" that can be procured in three years or less. The projects in this Program Element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

DC40

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC40 Unit/Organizational Equipment	3003	1746	1795	1811	1841	2026	2064	2072	Continuing	Continuing

A. Mission Description and Justification: Develop and field soft shelters, showers, latrines and heaters to improve unit sustainability and combat effectiveness. The Force Provider package of tents, laundries, showers, and latrines supports improved soldier quality of life as well as humanitarian aid and disaster relief. Improved maintenance tents will ensure continuous operation and combat readiness of helicopters and vehicles. The Family of Space Heaters replaces unsafe and inefficient space heaters and offers new capabilities to heat modern tents. The Laundry Advanced System (LADS) replaces aging M85 Field Laundries on a 1:4 basis.

Acquisition Strategy: Developments transition to procurement.

FY 1996 Accomplishments:

- 1995 Completed testing and made production decision on latrines and batch laundry as part of the Force Provider pre-planned product improvement (P3I) designed to provide rest and refit facilities in an austere environment.
- 320 Completed PQT and type classified the Space Heater - Convective (SHC) to increase safety, reliability and efficiency of field heaters.
- 45 Completed development and type classified the Modular General Purpose Tent System (MGPTS) for Low Rate Initial Production contract.
- 643 Initiated procurement action second generation LAS prototypes for Technical Testing and Operational Testing (TT/OT).
- Total 3003

FY 1997 Planned Program:

- 1670 Award integrated contract for development and procurement of the LADS which includes water recycle capability and eliminates hazardous waste products.
- 34 For Family of Field Latrines (FOFL), type classify the Force Provider latrine as the Army's follow-on latrine.
- 42 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 1746

Project DC40

Page 2 of 27 Pages

Exhibit R-2 (PE 0604713A)

786

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

DC40

FY 1998 Planned Program:

- 1000 Conduct DT/OT on LADS prototypes, type classify, and transition to production.
- 259 Conduct Milestone II decision. Upgrade the NBC Protective Cover for fire protection capability for use in the hospital tent liner. Conduct market search, and award contract for fabric development.
- 400 Fabricate upgraded frame support system for the MGPTS Pre-planned Production Improvement.
- 136 Conduct market investigation for the Recon Heater, procure NDI prototypes, and conduct concept evaluation.
- Total 1795

FY 1999 Planned Program:

- 356 Conduct technical testing on the NBC Protective Cover.
- 300 Conduct test and evaluation for the MGPTS upgraded frame system and upgraded specification to improve modularity, flooring, and ventilation capability.
- 355 Conduct technical and operational test and evaluation on the Recon Heater and type classify the performance specification.
- 200 Conduct market survey for field reproduction and procure NDI prototypes.
- 150 Conduct market survey for command post equipment and procure NDI prototypes for evaluation.
- 150 Conduct market survey for Field Pressure Washer and procure NDI prototypes for evaluation.
- 300 Develop upgraded equipment/sub-components for the Advanced Cloth Reproduction.
- Total 1811

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
4106	1784	1923	1949
4220	1746		
-1217			
3003	1746	1795	1811

Change Summary Explanation: Funding - In FY 1996 reduction was reprogrammed to higher priority requirements (-1103).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
RDTE, 0603747.DCO9, Unit/Org Equipment	2126	1289	1955	1737	2025	1989	2033	1564	Compl	Cost
OPA 3, M80200, Force Provider	11892	24981	11633	24188	23390	22956	19839	19876	Cont	Cont
OPA 3, M86200, LADS				5401	8334	6822	14284	9938	Cont	Cont

Project DC40

Page 3 of 27 Pages

Exhibit R-2 (PE 0604713A)

787

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1997		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE													
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment													
D. <u>Schedule Profile</u>		FY 1996		FY 1997		FY 1998		FY 1999							
		1	2	3	4	1	2	3	4	1	2	3	4		
Conduct TT for Force Provider (laundry and latrines)					X*										
Conduct TT/OT of LADS prototypes									X						
TC MGPTS					X*										
TC Space Heater and SHC							X								
Awards LADS R&D/Procurement Contract							X								
Conduct TT/OT on LADS										X					
Type Classify LADS									X						
Fabricate MGPTS Frame P3I									X						
Develop NBC-PC Fabric Upgrade									X						
Conduct TT/OT on Recon Heater										X					
Type Classify Recon Heater													X		
Type Classify Follow-on-Latrine															
Conduct TT for NBC-Protective Cover (PC)											X				
*Milestone completed															

Project DC40

Page 4 of 27 Pages

Exhibit R-2 (PE 0604713A)

Project DC40

Page 4 of 27 Pages

Exhibit R-2 (PE 0604713A)

788

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment								DL40	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL40	Clothing and Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Continuing	Continuing
<p>A. Mission Description and Justification: Develop state-of-the-art individual clothing and equipment to improve the effectiveness, sustainability and quality of life of the individual soldier. Funding shown in FY 1996-FY 1998 reflects transfer of funds from DL40 to OSD PE 0604384BP to support the Chemical/Biological Defense program in accordance with Public Law 103-60 Title XVII.</p> <p>Acquisition Strategy: Soldier Modernization will be accomplished via integrated acquisition programs embodying procurement approaches ranging from NDI/modified NDI through integrated programs such as Land Warrior, Mounted Warrior, and Air Warrior. Acquisition strategies will vary from: 1) quick fixes in 36 months or less from concept to type classification (TC) such as Soldier Enhancement Programs (SEP); 2) modular improvements which require limited RDT&E and can be completed in more than 36 months from concept to TC; and 3) more technically challenging areas of integration and digitization in the Land Warrior program.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 264 Refined requirements based upon Operation Joint Endeavor threat, conducted Design Review, finalized component designs, awarded contract for DT/OT prototypes for Body Armor Set Individual Basic (BASIC) P31. 887 Conducted mini-test #2 and Design Review, started DT/OT for the Improved Toxological Agent Protective (ITAP) Suit. 855 Form Integrated Product Team (IPT) for Modular Body Armor (MBA) and Modular Load System (MLS), completed Acquisition Strategy for one contract for both systems, conducted pre-proposal conference with draft request for proposal (RFP), received proposals and completed source selection. 88 Procured test items and initiated evaluation of the Optional Uniform Fabric. <p>Total 2094</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 550 Conduct DT/OT, complete assessment reports, obtain Milestone III approval, transition Technical Data Package (TDP) to Defense Personnel Support Center for the BASIC P31. 250 Complete DT/OT and assessment reports, obtain MS III approval, transition to procurement for the ITAP. 3664 Award single RDTE contract for MBA and MLS, evaluate up to three competing designs in Customer Evaluation and lab testing downselect (using Expert Choice to select up to two competing designs for DT/OT test items), conduct Explosive Ordnance Detachment (EOD) suit domestic/foreign market survey and procure EOD suit prototypes, downselect for prototype test items. 98 Milestone I Decision on the Optional Uniform, procure test item and initiate field test. 											

Project DL40

Page 6 of 27 Pages

Exhibit R-2 (PE 0604713A)

790

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

DL40

FY 1997 Planned Program: (continued)

- 173 Procure prototypes, conduct feasibility evaluation, modify patterns and size tariff, complete technical data and forward to procurement center for integrated sizing of the Battle Dress Uniform.
- 116 Small Business Innovation Research/Small Business technology Transfer (SBIR/STTR) Program
- Total 4851

FY 1998 Planned Program:

- 155 Conduct a pre-production prove-out of the BASIC P3I.
- 2648 Fabricate test items and initiate the DT/OT of the MBA and MLS.
- 323 Develop design modifications and procure prototypes for a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the All-Weather Coat (Men's and Women's).
- 300 Conduct a market survey, test new materials, develop designs, and initiate test of a Disposable Emergency Ensemble.
- 258 Procure test prototypes, conduct an abbreviated DT/OT, obtain approval of Static Resistant Cold Weather Clothing, and transition to procurement.
- Total 3684

FY 1999 Planned Program:

- 620 Complete DT/OT and assessment reports for the MBA and MLS.
- 305 Conduct a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the All-Weather Coat (Men's and Women's).
- 800 Modify designs, procure test prototypes, and initiate the DT/OT of the Advanced Combat Uniform.
- 900 Modify designs, procure test prototypes, complete DT/OT, and obtain Milestone III approval of the Advanced Combat Helmet (ACH) and the Concealable Body Armor.
- 500 Complete test of the Disposable Emergency Ensemble, obtain Milestone III approval, and transition to procurement.
- 1205 Develop initial designs, conduct an early user evaluation, and refine designs for Climate Control Equipment (heating and cooling) for the individual soldier.
- Total 4330

B. Project Change Summary

- FY 1997 President's Budget
- Appropriated Value
- Adjustments to Appropriated Value
- FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
2145	4955	3962	4690
2205			
-111			
2094	4851	3684	4330

Project DL40

Page 7 of 27 Pages

Exhibit R-2 (PE 0604713A)

791

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

DL40

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D669, Clothing & Equipment	2533	3347	3339	3374	4113	3640	5799	5172	Cont	3108
RDTE, 0604384BP.L40, JSLIST	3108								Cont	1937
RDTE, 0603884BP.IP4, Individual Protection		1937							Cont	12202
RDTE, 064384BP.IP5, Individual Protection		1184		5250					Cont	
DoD CBDP, MA0400, Protective Clothing		19677	35245	39788	40628	31499	39029	40600	Cont	
OMA, 114092000, Central Funding and Fielding	40565	87739	42405	54222	79734	82242	84025	85848	Cont	

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
1	2	3	4	1	2	3	4	1	2	3	4

Conduct Market Surveys/Design Reviews:

Modular Body Armor, and Modular

Load Bearing Equipment

Conduct Market Surveys/Design Reviews:

Advanced Combat/Garrison Uniform,

Extreme Cold Weather Clothing

System Undergarments

Procure test items/initiate DT/OT:

Modular Body Armor and Modular

Load Bearing Equipment

Design modifications of Maternity

Uniforms, Men's and Women's Dress

Items and All Weather Coats//Test

prototypes//Wear test and acceptability

evaluation//Reports and Milestone III

Market Survey for a Disposable

Emergency Ensemble//Material tests and

designs//DT and OT//Reports, Milestone

III and transition to production

Project DL40

Page 8 of 27 Pages

Exhibit R-2 (PE 0604713A)

792

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

DL40

D. Schedule Profile

Test prototypes of Static Resistant Cold Weather Clothing Material//DT and OT//Reports, approval and transition to production

Complete DT and OT of MBA and MLS//Reports and type classify

Design modifications of the Advanced Combat Uniform//Test prototypes//Start DT and OT

Design modifications of the ACH and Concealable Body Armor//Test prototypes//Phase II DT and OT, MSIII, transition to production

Initial designs of Climate Control Equipment for the individual soldier//Early user evaluation//Design modifications

* Milestone completed

FY 1999

2

3

4

FY 1998

2

3

4

X

1

X

FY 1997

2

3

4

X

FY 1996

2

3

4

1

1

X

Project DL40

Page 9 of 27 Pages

Exhibit R-2 (PE 0604713A)

793

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment	DL40
A. Project Cost Breakdown			
Primary Hardware Development	FY 1996 2094	FY 1997 4735 116 4851	FY 1998 3684
SBIR/STTR			
Total	2094	4851	4330
B. Budget Acquisition History and Planning Information: Not applicable			

Project DL40

Page 10 of 27 Pages

Exhibit R-3 (PE 0604713A)

794

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and

D548

Equipment

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D548 Military Subsistence System	802	792	884	1294	1643	1765	1877	1884	Continuing	Continuing

A. Mission Description and Justification: Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of food and food service equipment to enhance soldier efficiency and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. Development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and Operation and Support costs of subsistence support for service men and women. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuels and decrease fuel and water requirements. Program is reviewed and validated twice annually by the DoD Food and Nutrition Research and Engineering Board as part of the Joint Service DoD Food Program.

Acquisition Strategy: Developments transition to procurement

FY 1996 Accomplishments:

- 244 Completed technical/operational testing and type classified the Multi-Fuel Burner Unit (MBU) designed to replace the M2 Burner which uses current battlefield fuels for safer, more efficient heating in all field kitchen systems.
- 98 Conducted technical and user testing of the Air Force Initial Deployment Kitchen and transitioned Technical Data Package (TDP) to procurement to increase mission responsiveness and improve customer satisfaction by means of an all-electric, rapidly deployable, all-climate feeding system.
- 460 Fabricated test prototypes and initiated Development Testing/Early User Test and Evaluation (DT/EUT&E) on the Containerized Kitchen to increase flexibility and efficiency of future field feeding system.

Total 802

FY 1997 Planned Program:

- 131 Complete design/development of MBU interface components for integration into the Army Field Feeding System (AFFS).
- 335 Complete DT/EUT&E and type classify, and develop procurement documentation for the Containerized Kitchen.
- 165 Procure, fabricate and evaluate in a complete kitchen low cost safety improvements for the Mobile Kitchen Trailer (MKT).
- 142 Procure and evaluate electrification upgrades to Air Force field kitchens.
- 19 Small Business Innovation Research/Small Business technology Transfer (SBIR/STTR) Program

Total 792

Project D548

Page 11 of 27 Pages

Exhibit R-2 (PE 0604713A)

795

Item 82

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and

D548

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Project D548

Exhibit R-2 (PE 0604713A)

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

D548

A. Project Cost Breakdown

Primary Hardware Development

SBIR/STTR

Total

FY 1996

802

FY 1997

773

FY 1998

884

FY 1999

1294

19

1294

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Contract

Method/Type

Award or Obligation

Date

Performing Activity

EAC

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Project D548

Page 14 of 27 Pages

Exhibit R-3 (PE 0604713A)

798

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and

D667

Equipment

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D667 Land Warrior	0	47893	33031	16965	7664	8892	11204	9388	Continuing	Continuing

A. Mission Description and Justification: Land Warrior (LW) is an integrated fighting system for dismounted combat soldiers. The LW program will enhance the soldier's battlefield capabilities through the development and integration of an assortment of Army systems/components and technologies into a cohesive, timely, and combat effective system. These systems/components include an integrated individual soldier computer/radio, enhancements to protective clothing and individual equipment, integrated headgear with helmet mounted display and image intensifier, and modular weapon system with thermal weapon sight, infrared aiming light, laser rangefinder, digital compass, video camera, and close combat optic. LW will bring the dismounted soldier into the digital battlefield.

Acquisition Strategy: The LW Engineering and Manufacturing Development (EMD) program is designed to field currently existing/mature technologies to meet soldier requirement deficiencies. The Force XXI Land Warrior program will be developing advanced technology components for insertion into the LW consolidated program. An Integrated Product Team (IPT) was formed to determine which technologies from the S&T program will be integrated into the LW program. LW EMD transitions to procurement.

FY 1996 Accomplishments: Funded in RDTE PE 0603001.DI50, Force XXI Soldier

FY 1997 Planned Program:

- 6850 Fabricate LW prototypes for Development Testing (DT) and procure long lead items for Initial Operational Test and Evaluation (IOTE).
- 4376 Conduct LW contractor and government testing, and prepare test support package.
- 12419 Fix deficiencies resulting from Early Operational Exercise (EOE) and contractor testing, finalize LW hardware/software design/integration, and conduct independent verification and validation (IV&V) of software. Ensure contractor and government compliance with Army Technical Architecture.
- 12193 Implement LW functional plans: Integrated Logistics Support (ILS), configuration management, etc., publish LW draft system manuals; and conduct maintenance training in preparation for Logistics Demo.
- 1600 Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
- 6403 Program Management, Government and contractor engineering support, from other government agencies to provide oversight of contractor effort.
- 500 Initial program management and engineering support for other government agencies to provide studies and market surveys for the Mounted Warrior program.
- 2383 HQ and BASOPS support.
- 1169 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 47893

Project D667

Page 15 of 27 Pages

Exhibit R-2 (PE 0604713A)

799

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D667

FY 1998 Planned Program:

- 7431 Contractor program management, complete Production Qualification Test (PQT) (C); fix deficiencies, and conduct IV&V of software. Ensure system compliance with Army Technical Architecture.
- 6283 Fabricate and deliver prototypes for PQT (G) and Initial Operational Test and Evaluation (IOTE) and to support Early User Test (EUT) which is Force XXI LW demo. Procure IOTE items and supplies.
- 9403 Conduct PQT(G), logistics demo, IOTE training, and conduct IOTE
- 1697 Government participation (IPT) for Design and Development and Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
- 4914 Program management and engineering support from other government agencies to provide oversight of contractor effort. Write specifications for LW production contract
- 3303 HQ and BASOPS support.
- Total 33031

FY 1999 Planned Program:

- 10447 Contractor program management, fix deficiencies from IOTE, and conduct IV&V of software. Ensure system compliance with Army Technical Architecture.
- 3125 Program Management and engineering support from other government agencies to provide oversight of contractor effort. Conduct technical and program reviews (FCA, PCA, and PRR) and briefings to achieve MS III. Develop/coordinate documentation of release of RFP and conduct SSEB to award production contract.
- 1697 Government participation (IPT) for design and development and Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
- 1696 HQ and BASOPS support.
- Total 16965

B. Program Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget	0	48917	37616	20354
Appropriated Value		47893		
Adjustment to Appropriated Value				
FY 1998 Pres Request	0	47893	33031	16965

Project D667

Page 16 of 27 Pages

Exhibit R-2 (PE 0604713A)

800

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D667

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603001.DJ50, Force XXI Land Warrior	30548	15936	11298	7016	6423	6434	7669	7997	Cont	Cont
OPA 3, M80500, Land Warrior				66206	94486	104601	24089	119101	Cont	Cont
OPA 4, MS3610, Initial Spares-Land Warrior	900	2114	2152	5318	215	251	270	268	Cont	Cont
WTCV, GB3007, M4 Carbine Mods	2751	5526	7603	7060					Cont	16124
WTCV GZ2800 M16 Rifle Mods									Cont	22940

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999	FY 1999
1 Early Operational Experimentation (EOE)	2	3	4	1	2	3	4	1	2	3
Hardware Preliminary Design Review (PDR)	X*									
LW Software Design Review and Mockups	X*									
EOE Hardware Critical Design Review (CDR)	X*									
EOE			X*							
LW Hardware PDR			X							
LW CDR				X						
Fabricate/Deliver DT prototypes					X					
Contractor Production Qualification Test					X					
Government Production Qualification Test					X					
Logistics Demonstration						X				
Fabricate/Deliver OT items						X				
IOTE Training							X			
IOTE								X		
Early User Test									X	
Milestone III/Production Award										X

*Milestone completed

Project D667

Page 17 of 27 Pages

Exhibit R-2 (PE 0604713A)

801

Item 82

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

D667

<u>A. Project Cost Breakdown</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
System Engineering and Program Management		4434	3795	2325
System Test and Evaluation		1476	7600	1669
Prototype Development and Manufacturing		37262	18333	11275
Other RD/TE Costs		3552	3303	1696
SBIR/STTR		1169		
Total		47893	33031	16965

B. Budget Acquisition History and Planning Information:

[illegible]

Project D667

Page 18 of 27 Pages

Exhibit R-3 (PE 0604713A)

802

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and
Equipment

D667

Government Furnished Property: None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	244		42029	21681	13267		77221
Subtotal Support and Management	252		4388	3750	2029		10419
Subtotal Test and Evaluation			1476	7600	1669		10745
Total Project	496		47893	33031	16965		98385

Project D667

Page 19 of 27 Pages

Exhibit R-3 (PE 0604713A)

803

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

D668

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D668 Soldier Enhancement Program	10150	21146	14563	14645	14706	14706	14517	14600	Continuing	Continuing

A. Mission Description and Justification: The objective of the Soldier Enhancement Program (SEP) is to increase the lethality, command and control, sustainability, mobility, and survivability of the soldier through accelerated acquisition of lighter, more lethal weapons and improved "soldier items" including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigation aids. For SEP purposes, soldiers are managed in three categories: dismounted soldiers, combat crews (air and ground), and other soldiers. Projects generally take three years to complete.

Acquisition Strategy: SEP procurement consists of Non-Developmental Items (NDI) or modified NDI that can be fielded in three years or less. Items that are technologically challenging requiring more than three years development are pursued under the appropriate system area. SEP items are reviewed and approved for development one year and begin development during the next year. Procurement varies by appropriation.

FY 1996 Accomplishments:

- 1670 Completed development/type classification: 40mm IR Illumination Round, HMMWV Mount, Medium Machine Gun, Close Combat Optics, M24 Flash Suppressor/Blast Attenuator, Miniature Binoculars, Portable Periscope, Improved Butt Pack, Improved Rain Suit, Small Unit Shower, Mounted Crewman Boot, Improved Personnel Armor System Ground Troops (PASGT) Helmet Suspension, Inconspicuous Body Armor, Fighting Position Excavator, Soldier Fighting Cover, Armor Crew/Infantry Mask, and Selectable Lightweight Attack Munitions.
- 5119 Continued development/procured prototypes and/or tested: Modular Weapon System, Surveillance Battle Damage Assessment (BDA) Device, Machine Gun Optics, XM84 Stun Hand Grenade II, M203 for the M4 Carbine, Lightweight Chemical Overgarment, Improved Chemical/Biological Glove, Combat Medic Vest, Improved Flotation Device, Small Unit Shower, Fighting Position Revetment Kit, Enhanced Incendiary Grenade, and Individual Soldier Radio.
- 1874 Initiated market surveys and developed: Commercial Boot Survey, Midsize Riot Control Dispenser, Non-Lethal 40mm Grenade, Shin/Knee Guards for Riot Control, Anti-Reflection Device, Compression Sack, and Non-Lethal 5.56mm Cartridge and M249 Feed Tray Cover.
- 972 Program Management and in-house efforts.
- 515 Terminated: Lightweight Leader Computer, 40MM Smoke Projectile and Individual Sand Bagging Accessory.
- Total 10150

Project D668

Page 20 of 27 Pages

Exhibit R-2 (PE 0604713A)

804

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D668

FY 1997 Planned Program:

- 6221 Complete development/type classify: Modular Weapon System, M203 for the M4 Carbine, Surveillance BDA Device, Machine Gun Optics, XM84 Stun Hand Grenade II, M249 Feed Tray Cover, M4 Improved Buttstock, Lightweight Chemical Overgarment, Improved Chemical/Biological Glove, Shin/Knee Guards for Riot Control, Combat Medic Vest, Compression Sack, Improved Flotation Device, Small Unit Shower, Midsize Riot Control Disperser, Individual Soldier Radio and Fighting Position Revetment Kit.
- 4948 Continue development/procure prototypes and/or test: Non Lethal 40MM Grenade, Non-Lethal 5.56MM Cartridge, Enhanced Incendiary Grenade and Anti-Reflection Device.
- 7466 Initiate market surveys and/or development: Heavy Sniper Weapon System, M249 Flexmount, Weapon Flashlight, Back-up Iron Sight for M4/M16, Close Quarters Battle Sling for the M4 Carbine, Shoulder Holster for 9mm Pistol (Left/Right Handed), Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Blast Protective Boots, Elbow and Knee Pads for BDU, On the Move Hydration System, Ballistic Shin Guards, Pistol Belt Extender, Improved Underlying Insulating Layers for Extended Cold Weather Clothing System (ECWCS), Alternate Wear Hot Weather Boot, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Handheld Infrared Flare/Smoke & Grenade, and Blacklight.
- 30 Terminated: Canteen Cup Cooler
- 1980 Program management and in-house efforts.
- 501 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 21146

FY 1998 Planned Program:

- 3076 Complete development/type classify: Anti-Reflection Device, M249 Flexmount, M4 Improved Buttstock, Weapon Flashlight, Close Quarters Battle Sling for the M4 Carbine, Back-up Iron Sight for M4/M16, Blast Protective Boots, Elbow and Knee Pads for BDU, On the Move Hydration System, Ballistic Shin Guards, Pistol Belt Extender, Improved Underlying Insulating Layers for ECWCS, Alternate Wear Hot Weather Boot, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Low Profile Flotation Collar, Emergency Breathing Device, and Enhanced Incendiary Grenade.
- 4275 Continue development/procure prototypes and/or test: Heavy Sniper Weapon System, Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Physical Fitness Uniform, Handheld Infrared Flare/Smoke, Grenade and Blacklight.
- 5862 Initiate market surveys/development on new items, in the process of approval, to begin development in FY 1998.
- 1350 Program management and in-house efforts.
- Total 14563

Project D668

Page 21 of 27 Pages

Exhibit R-2 (PE 0604713A)

805

Item 82

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

D668

FY 1999 Planned Program:

- | | |
|-------|---|
| 2076 | Complete development/type classify: Heavy Sniper Weapon System, Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Physical Fitness Uniform, Handheld Infrared Flare/Smoke Grenade and Blacklight |
| 6148 | Continue development/procure prototypes and /or test projects for which market surveys/development commenced in FY 1998. |
| 5071 | Initiate market surveys/development on new items to commence in FY 1999. |
| 1350 | Program management and in-house efforts. |
| 14645 | Total |

B. Project Change Summary

FY 1997 President's Budget	10398	21598	20743	35368
Appropriated Value	10690	21146		
Adjustments to Appropriated Value	-540			
FY 1998 Pres Bud Request	10150	21146	14563	14645

Change Summary Explanation: FY1998 and FY1999 funding reprogrammed to support higher priority requirements.

C. Other Program Funding Summary

[illegible]

Project D668

Page 22 of 27 Pages

Exhibit R-2 (PE 0604713A)

806

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D668

D. Schedule Profile:

	FY 1996	FY 1997	FY 1998	FY 1999
1	2	2	1	2
	3	3	4	3
SEP Requirements Reviews	X*	X		4
SEP Projects Reviews			X	

*Milestone completed

Note: Numerous individual projects are ongoing under the Soldier Enhancement Program (SEP) and each project has its own milestone schedule.

Project D668

Page 23 of 27 Pages

Exhibit R-2 (PE 0604713A)

807

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment		
		PROJECT D668		
A. <u>Project Cost Breakdown</u>				
Soldier Enhancement Program				
SBIR/STTR				
Total				
		FY 1996	FY 1997	FY 1998
		10150	20645	14563
			501	14645
		10150	21146	14563
				14645
B. <u>Budget Acquisition History and Planning Information:</u>		Not applicable		

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and

D680

Equipment

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D680 Mounted Warrior	0	0	2007	4494	2501	0	0	0	0	8992

A. Mission Description and Justification: Mounted Warrior (MW) is an integrated modular system that will enhance the combat crewman's fighting capabilities. The MW system will be used by a wide variety of combat crewmen and will be tailored based on Mission, Enemy, Terrain/Weather, Troops Available and Time (METT-T). The physical burden imposed by cumbersome personal equipment can degrade a crewman's effectiveness by increasing rates of fatigue, reducing mobility and restricting his ability to perform mission functions. Consideration will be given to optimizing the balance between vehicle mounted and crewman mounted equipment and designing an overall system that will improve the crewman's endurance, safety, mission performance and crewman/vehicle interface. The MW system will provide hands free, tetherless communications, increased laser eye protection, maximum individual protection from nuclear, biological and chemical (NBC) contaminations, spall, flame and heat, and will provide for better performance of crew tasks without reducing tactility and agility.

Acquisition Strategy. The MW program is designed to field currently existing/mature technologies to meet the needs of the Combat Vehicle Crewman (CVC).

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

- 250 Complete source selection and award contract for MW program integration.
- 1069 Identify existing and mature technologies for MW system design. Ensure contractor and government compliance with Army Technical Architecture.
- 500 Conduct early operational evaluation (EOE) of components.
- 188 Program management and government oversight of contractor effort.

Total 2007

FY 1999 Planned Program:

- 540 Fabricate MW prototypes for Developmental Testing (DT).
- 360 Program management and government oversight of contractor effort.
- 1000 Conduct MW DT (contractor and government testing) and prepare test support package.
- 1400 Fix deficiencies, finalize MW hardware/software design/integration, and conduct independent verification and validation of software.

Project D680

Page 25 of 27 Pages

Exhibit R-2 (PE 0604713A)

809

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

D680

FY 1999 Planned Program: (continued)

- 1000 Implement MW functional plans: integrated logistics support (ILS), configuration management, etc.; publish MW draft system manuals; and conduct maintenance training in preparation for the Logistics Demonstration.
- 194 Procurement of MW long lead items for IOTE.

Total

B. Project Change Summary

FY1997 President Budget

FY 1996

0

FY 1997

0

FY 1998

0

FY 1999

0

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

0

0

2007

4494

Change Summary Explanation: Funding - Project is a new start in FY 1998 (+2007), FY 1999 increased (+4494) to continue.

C. Other Program Funding Summary

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 2004

FY 2005

FY 2006

FY 2007

OPA 3, M80600, Mounted Warrior

D. Schedule Profile

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 2004

FY 2005

FY 2006

FY 2007

MS 0

Trade-off determination

Operational Requirements Document

Approval

Milestone I/II

Development contract award

Early operational evaluation components

Fabricate MW prototypes for DT

Conduct MW DT

Procure MW long lead items for IOTE

*Milestone completed

Project D680

Page 26 of 27 Pages

Exhibit R-2 (PE 0604713A)

810

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

PROJECT

D680

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Program Management			188	360
System Engineering			1069	2400
System Test and Evaluation			500	1000
Develop and Manufacture Prototypes				734
Other RDTE			250	
Total			2007	4494

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Contractor-TBD	CPIF	Oct 98									
RDEC SPT	MIPR										
Spt Contractor	Task Order										
Support and Management Organizations											
PM Soldier	In-House										
Test and Evaluation Organizations											
OPTEC	MIPR										
TECOM	MIPR										

Government Furnished Property: None

Subtotal Product Development	1319	3634	4953
Subtotal Support and Management	188	360	548
Subtotal Test and Evaluation	500	500	1000
Total Project	2007	4494	6501

Project D680

Page 27 of 27 Pages

Exhibit R-3 (PE 0604713A)

811

Item 82

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development									
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	50140	48788	76749	73048	65533	46932	47560	57057	Continuing	Continuing	
DC82 Louisiana Maneuvers	1525	0	0	0	0	0	0	0	0	10030	
DC91 Distributive Interactive Simulation	7985	0	0	0	0	0	0	0	0	9345	
D241 Non-System Training Devices	28996	35951	60512	57306	49309	30811	26222	39600	Continuing	Continuing	
D396 Tactical Simulation (TIARA)	1975	2722	5665	5047	4765	4494	5963	6357	Continuing	Continuing	
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD)	9659	10115	10572	10695	11459	11627	15375	11100	Continuing	Continuing	

Mission Description and Budget Item Justification: Program Element funds engineering development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Training devices and training simulations provide force multipliers that improve combat effectiveness by providing realistic training while helping to control rapidly escalating costs. Training devices maximize the transfer of knowledge, skills and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Combat Maneuver Training Center (CMTTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) will provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project DC82, Louisiana Maneuvers, was intended to energize and guide the restructuring of the Army while simultaneously keeping it combat-ready for any contingency. Project DC91, Distributive Interactive Simulation (DIS), included engineering development of techniques and technology for DIS and related simulations and simulator efforts (transferred to PE 0604760 in FY 97). Project D241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project D396, Tactical Simulation, is an intelligence simulation/driver for both training [intelligence driver for Corps Battle Simulation (CBS) and Warfighter Simulation 2000 (WARSIM)] and testing. Project D573, STRICOM/Naval Air Warfare Center Training Systems Division (NAWCTSD) Support, funds in-house costs of project support by US Army Simulation, Training and Instrumentation Command (STRICOM) and NAWCTSD. This Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

DC82

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC82 Louisiana Maneuvers	1525	0	0	0	0	0	0	0	0	10030

A. Mission Description and Justification: DC82 - Louisiana Maneuvers (LAM): LAM served as a laboratory for the Army to practice its roles and missions, to develop and explore options, to assess and direct progress, to provide a framework for decisions by senior leaders, and to facilitate the Army's transformation. LAM consisted of a series of related exercises forming a campaign to assess the Army of the 21st century in areas of policy, doctrine, organization, training, materiel, leader development, and soldier issues shaping the force. As an evolving process, LAM exploited the results and outcomes of each exercise by incorporating lessons learned in order to enhance the value of follow-on exercises. Overall, LAM focused the Army's self-assessment of institutional effectiveness, provided direction for change, and oriented the Army's leadership to accomplish the national military strategy with available resources.

Acquisition Strategy: Competitive development.

FY 1996 Accomplishments:

- 465 Continued development of analytic and operational models, simulation and other technology in support of Force XXI.
 - 1060 Support of AUSA events.
- Total 1525

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustment to Appropriated Value

FY 1998 Pres Bud Request

	FY 1996	FY 1997	FY 1998	FY 1999
	5810	0	0	0
	5973			
	-4448			
	1525	0	0	0

Change Summary Explanation: In FY 1996, (-4285)funding was reprogrammed to higher priority requirements.

Project DC82

Page 2 of 18 Pages

Exhibit R-2 (PE 0604715A)

813

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

DC82

C. Other Program Funding Summary

OPA2, Appropriation

BE4162 MACOM Automation Systems

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
940	0	0	0	0	0	0	0	0	940

D. Schedule Profile: Not Applicable

Project DC82

Page 3 of 18 Pages

Exhibit R-2 (PE 0604715A)

814

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development		DC82
A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998
Program management	1225	0	0
Exercise support	300	0	0
Total	1525		
B. Budget Acquisition History and Planning Information: Not Applicable			

Project DC82

Page 4 of 18 Pages

Exhibit R-3 (PE 0604715A)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997																									
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																										
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development								DC91																										
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																									
DC91	Distributive Interactive Simulation	7985	0	0	0	0	0	0	0	0	9345																									
<p>A. Mission Description and Justification: DC91 - Distributive Interactive Simulation (DIS) - This project focuses on engineering development of techniques and DIS technology of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Effective FY 97 this project is transferred to PE 0604760A, which more clearly describes the program effort.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 1348 Provided system engineering, configuration management, systems interoperability and standards development for the Army Synthetic Environment. 950 Performed DIS verification, validation and accreditation methodology. 531 Developed enhancements to modular semi-automated forces software. 2856 Continued engineering and development of Battlelab Reconfigurable Simulators. 2300 Development conducted in support of Army Warfighting Experiment and Synthetic Theater of War. <p>Total 7985</p> <p>FY 1997 Planned Program: Project moved to PE 0604760A.</p> <p>FY 1998 Planned Program: Project not funded.</p> <p>FY 1999 Planned Program: Project not funded.</p> <p>B. Project Change Summary</p> <table border="0"> <tr> <td>FY 1997 President's Budget</td> <td>FY 1996</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>5972</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustment to Appropriated Value</td> <td>6139</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1998 Pres Bud Request</td> <td>+1846</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>7985</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding - FY 96 (+2013) Funding increase to support Army Warfighting Experiments.</p> <p>Project DC91</p>												FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999	Appropriated Value	5972	0	0	0	Adjustment to Appropriated Value	6139				FY 1998 Pres Bud Request	+1846					7985	0	0	0
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999																																
Appropriated Value	5972	0	0	0																																
Adjustment to Appropriated Value	6139																																			
FY 1998 Pres Bud Request	+1846																																			
	7985	0	0	0																																

Exhibit R-2 (PE 0604715A)

Page 5 of 18 Pages

816

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

DC91

C. Other Program Funding SummaryOPA 3, Appropriation KA6000, Recon Simulators
OMA, Reconfigurable Simulators

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd	Total Cost Cont'd
	12222	13825	13823	12803	8997	8282	4960	4969		
	16900	11634	16033	13000	13000	14000	18000	18000		

D. Schedule Profile

FY 1996

FY 1997

FY 1998

FY 1999

1	4	1	3	4	1	2	3	4
X*								
X*								

Award Contract

DIS Verification and Validation

Reconfigurable Simulator Contract

* Completed Milestones

Project DC91

Page 6 of 18 Pages

Exhibit R-2 (PE 0604715A)

817

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development		
A. <u>Project Cost Breakdown</u>		FY 1996	FY 1997	FY 1998
Develop module definition for Soldier Combat Service Support and early entry simulations		2197		
Simulation Software upgrades		3555		
DIS Verification and Validation		2233		
Total		7985		
B. <u>Budget Acquisition History and Planning Information:</u> Not Applicable				

Project DC91

Page 7 of 18 Pages

Exhibit R-3 (PE 0604715A)

818

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

D241

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D241 Non-System Training Devices	28996	35951	60512	57306	49309	30811	26222	39600	Continuing	Continuing

A. Mission Description and Justification: D241 - NSTD Combined Arms: This project is used to develop prototype training devices to support Combined Arms (Infantry, Armor, Aviation, Air Defense, Engineer, Chemical, and Support troops) training and multi-system training within the Army, to include the Reserve Components. Corps Battle Simulation (CBS) is the Army's standard command and staff training simulation at the corps/division level. Brigade/Battalion Battle Simulation (BBS) is a simulation that trains commanders and their staffs in command and control skills via two sided, free play, real time computer driven exercises. Combat Service Support Training Simulation System (CSSTSS) is a training simulation which supports training at battalions through echelons-above-corps levels to provide the level of detail required to train logistics commanders and staffs. CSSTSS will be incorporated into the Warfighter Simulation (WARSIM). WARSIM will be the next generation battle simulation to replace CBS and BBS. WARSIM will utilize current technology to efficiently provide training support and linkage to other simulations and simulators. WARSIM will comply with Simulation Interoperability Standards Organization (SISO) standards and open architecture to meet the Army's training requirements into the next century, to include High Level Architecture (HLA) compliance. WARSIM is also the land component element of the Joint Simulation System (JSIMS), which is a joint initiative managed by the JSIMS Joint Program Office. Multiple Integrated Laser Engagement Simulation 2000 (MILES 2000) will provide additional cost effective weapon system capabilities during tactical engagement exercises. The Fire Support Combined Arms Tactical Trainer (FSCATT) provides for initial and sustainment gunnery training, and can be linked as part of the CATT family. FSCATT is designated as the Army's only Defense Acquisition Pilot Program IAW the Federal Acquisition Streamlining Act (FASTA). The Engagement Skills Trainer (EST) provides individual and squad level home station training with a deployable small arms engagement trainer, resulting in a significant savings in ammunition costs. This project funds the development of training devices, simulators, simulations and instrumentation for the Combat Training Centers (CTC's) to include Opposing Forces Surrogate Vehicles (OSV's) for display of doctrinally correct threat at the CTC's; Joint Readiness Training Center Military Operations in Urban Terrain (JRTC MOUT) for training in a realistic MOUT environment; Combat Training Center Opposing Forces (OPFOR) Surrogate Tracked Vehicles (STV) modernization to simulate the T-80 Main Battle Tank and additional OPFOR tracked vehicles at the NTC, JRTC and CMTC; National Training Center Objective Instrumentation System (NTC OIS) to provide a completely digital based system for full tactical system connectivity and DIS compatibility. Devices developed will enable the Army to train units collectively to obtain synergistic results through the employment of weapons and support systems in their respective battlefield roles.

Acquisition Strategy: Competitive development efforts leading to competitive procurement against performance specifications.

FY 1996 Accomplishments:

- 568 Continued limited BBS enhancements.
- 1585 Completed development of CSSTSS for transition into WARSIM.

Project D241

Page 8 of 18 Pages

819

Exhibit R-2 (PE 0604715A)

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

D241

FY 1996 Accomplishments: (continued)

- 6485 Continued development of devices, simulators and simulations to support training at the Combat Training Centers, Air Ground Engagement System (AGES) II/CTC, JRTC MOUT, JRTC-Instrumentation System (IS).
- 3355 Completed CBS 1.5.3 and continued limited enhancements to CBS.
- 10340 Exercised contract option to downselect to prime contractor for WARSIM 2000 EMD.
- 6663 Continued development of FSCATT Phase I.
- Total 28996

FY 1997 Planned Program:

- 20629 Development of WARSIM 2000 EMD.
- 820 Initiate development MILES 2000 for new weapon systems (i.e., M1A2, M1A2 System Enhancement Program and Bradley A3).
- 3749 Complete development of FSCATT Phase I.
- 3209 Continue limited enhancements to CBS.
- 6665 Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II.
- 879 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 35951

FY 1998 Planned Program:

- 40863 Development of WARSIM 2000 EMD.
- 1113 Initiate development of Engagement Skills Trainer.
- 18080 Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC Opposing Forces Surrogate Vehicle (OSV) BMP(2000), JRTC MOUT Phase II(3216), CTC OPFOR Tracked Vehicles(10500) and NTC OIS(2364).
- 456 Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior 98).
- Total 60512

FY 1999 Planned Program:

- 33389 Development of WARSIM 2000 EMD and commencement of test.
- 4897 Continue development of Engagement Skills Trainer.
- 18936 Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include JRTC MOUT Phase II(5183), CTC OPFOR Tracked Vehicles(8300) and NTC OIS(5453).
- 84 Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior 99).
- Total 57306

Project D241

Page 9 of 18 Pages

Exhibit R-2 (PE 0604715A)

820

Item 83

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604715A Non-System Training Devices - Engineering Development

February 1997

[illegible]

***Complete Milestones**

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604715A Non-System Training Devices -
Engineering Development

PROJECT

D241

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
System Development	27464	34400	54396	50782
Test and Evaluation	1296	87	5697	6270
Technical Data	236	585	419	254
SBIR/STTR		879		
Total	28996	35951	60512	57306

B. Budget Acquisition History and Planning Information: Not Applicable

Project D241

Page 12 of 18 Pages

Exhibit R-3 (PE 0604715A)

823

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development								D396	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D396	Tactical Simulation (TIARA)	1975	2722	5665	5047	4765	4494	5963	6357	Continuing	Continuing
<p>A. Mission Description and Justification: D396 - Tactical Simulation (TACSIM): TACSIM/ Warfighters' Simulation (WARSIM) 2000 Intelligence Module (WIM): TACSIM is the intelligence driver for the Corps Battle Simulation (CBS). WIM will replace TACSIM in FY98 and will be used as the intelligence driver for WARSIM 2000. It provides simulated, raw intelligence data to drive the intelligence analysis function during major training exercises (i.e., Prairie Warrior, Ulehi Focus Lens, Atlantic Resolve, BCTP Warfighter Exercises and various Corps/Division and Joint exercises). TACSIM/WIM is a TIARA program.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 868 Completed TACSIM 2.1.5.3 development. 175 Completed TACSIM/Aggregate Level Simulation Protocol (AGSP) interface development. 457 Initiated TACSIM 2.1.5.4 development/compatibility with CBS. 475 Continued development of WARSIM intelligence capability. Total 1975 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 400 Provide Government project management, engineering, technical, and contract support. 733 Maintain contractor support services to WIM project effort. 1522 Contract award for development of WIM capability. 67 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. Total 2722 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 420 Provide Government project management, engineering, technical, and contract support. 410 Maintain contractor support services to WIM project effort. 4835 Continue WIM software development under contract. Total 5665 											

Project D396

Page 13 of 18 Pages

Exhibit R-2 (PE 0604715A)

824

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

D396

FY 1999 Planned Program:

- 100 Provide Government/Contract support.
 - 420 Maintain support services to WIM project effort.
 - 4327 Finalize WIM Initial Operating Capability (IOC) software development; continue development of WIM Full Operating Capability (FOC) software version.
 - 200 Support formal technical testing of WIM software for IOC.
- Total 5047

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2025	2781	3100	2295
Appropriated Value	2083	2722		
Adjustment to Appropriated Value	-108	0		
FY 1998 Pres Bud	1975	2722	5665	5047

Change Summary Explanation: Funding: FY 98(+2565)/FY 99(+2752) - funding increase to support the WARSIM 2000 intelligence model.

C. Other Program Funding Summary: Not applicable

D. Schedule Profile

	FY 1996			FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1	2	3	4
Software Build				X*								
Developmental Test and Evaluation		X*						X				
WIM Contract Award												
WIM IOT&E Complete												X
WIM IOC												X

* Completed Milestones

Project D396

Page 14 of 18 Pages

Exhibit R-2 (PE 0604715A)

825

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development		D396		
A. <u>Project Cost Breakdown</u>	FY 1996	FY 1997	FY 1998	FY 1999	
Software Development	518	1000	4000	3320	
System Engineering	478	522	835	1007	
Configuration Management	360	0	0	0	
Project Management	0	1133	830	520	
Technical Data	260	0	0	0	
Developmental Test and Evaluation	359	0	0	200	
SBIR/STTR		67			
Total	1975	2722	5665	5047	
B. <u>Budget Acquisition History and Planning Information:</u> Not Applicable					

Project D396

Page 15 of 18 Pages

Exhibit R-3 (PE 0604715A)

826

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604715A Non-System Training Devices -
Engineering Development

PROJECT

D573

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD)	9659	10115	10572	10695	11459	11627	15375	11100	Continuing	Continuing

A. Mission Description and Justification: D573 - STRICOM and NAWCTSD: This project funds STRICOM personnel salaries and support costs and a proportionate Army share of the operating costs of the Naval Air Warfare Center Training Systems Division (NAWCTSD) through an Inter-Service support agreement which is reviewed annually.

FY 1996 Accomplishments:

- 8459 Funded STRICOM personnel and support.
- 1200 Funded NAWCTSD support.
- Total 9659

FY 1997 Planned Program:

- 8915 Funds STRICOM personnel and support.
- 1200 Funds NAWCTSD support.
- Total 10115

FY 1998 Planned Program:

- 9322 Funds STRICOM personnel and support.
- 1250 Funds NAWCTSD support.
- Total 10572

FY 1999 Planned Program:

- 9445 Funds STRICOM personnel and support.
- 1250 Funds NAWCTSD support.
- Total 10695

Project D573

Page 16 of 18 Pages

Exhibit R-2 (PE 0604715A)

827

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																									
BUDGET ACTIVITY	PE NUMBER AND TITLE																											
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development		D573																									
<p>B. <u>Project Change Summary</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1996</th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1997 President's Budget</td> <td>9717</td> <td>10332</td> <td>10761</td> <td>10679</td> </tr> <tr> <td>Appropriated Value</td> <td>9987</td> <td>10115</td> <td></td> <td></td> </tr> <tr> <td>Adjustment to Appropriated Value</td> <td>-328</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>FY 1998 Pres Bud</td> <td>9659</td> <td>10115</td> <td>10572</td> <td>10695</td> </tr> </tbody> </table>					FY 1996	FY 1997	FY 1998	FY 1999	FY 1997 President's Budget	9717	10332	10761	10679	Appropriated Value	9987	10115			Adjustment to Appropriated Value	-328	0			FY 1998 Pres Bud	9659	10115	10572	10695
	FY 1996	FY 1997	FY 1998	FY 1999																								
FY 1997 President's Budget	9717	10332	10761	10679																								
Appropriated Value	9987	10115																										
Adjustment to Appropriated Value	-328	0																										
FY 1998 Pres Bud	9659	10115	10572	10695																								
<p>C. <u>Other Program Funding Summary:</u> Not applicable</p>																												
<p>D. <u>Schedule Profile:</u> The nature of this project does not lend itself to acquisition milestones.</p>																												

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604715A Non-System Training Devices -
Engineering Development**

PROJECT

D573

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Fund STRICOM Personnel & support	8459	8915	9322	9445
Fund NA WCTSD Support	1200	1200	1250	1250
Total	9659	10115	10572	10695

B. Budget Acquisition History and Planning Information: Not Applicable

Project D573

Page 18 of 18 Pages

Exhibit R-3 (PE 0604715A)

829

Item 83

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604716A Terrain Information - Engineering Development (TIARA)

PROJECT

D579

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D579 Field Army Map Sys Eng Dev	8509	7144	2942	2686	2034	2502	2247	2163	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element funds development of the Digital Topographic Support System/Quick Response Multicolor Printer (DTSS/QRMP). The current terrain analysis, topographic and reproduction support provided by Army Engineer Terrain Teams is a slow, labor intensive process that does not meet the needs of the Force XXI battlefield in which the commander must have the ability to rapidly obtain terrain information and topographic products. The Combat Terrain Information Systems (CTIS) Modernization Plan stated the requirement to proceed immediately with the Downsized DTSS configuration and further identified that QRMP functionality would be incorporated into the DTSS for a single integrated terrain analysis and reproduction capability. It has been determined that the downsized capability is now more appropriate to support contingency operations, operations other than war, and split based operations. The DTSS/QRMP will be deployed at Division, Corps, and EAC in support of these missions. The DTSS/QRMP will automate the updating and processing of terrain information into terrain analysis products, provide rapid reproduction of low volume, up-to-date, large format, full color imagery maps, situation overlays, special graphics (e.g. captured enemy maps) and other topographic and terrain products. Using the most current technology available, the functional capabilities of DTSS and QRMP will be developed into a single interoperable architecture. Part of imagery exploitation includes the development of a Multi-Spectral Imagery Processor (MSIP), which provides an image map making capability. Due to current world events and the possibility of contingency missions in areas where standard map products are not available, image map production has become an urgent need. The CTIS project office was tasked with the mission to issue the DTSS-MSIP as an interim measure to topographic units. The project in this Program Element supports research efforts in the Engineering and Manufacturing Development (E&MD) phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The Acquisition Strategy being pursued for the DTSS/QRMP EMD phase is to utilize Army standard equipment and the Common Hardware/Software (CHS) computer workstations in conjunction with non-development item (NDI) components to develop an integrated baseline hardware configuration. The plan is to utilize the Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor to execute the EMD phase, to perform system integration, and provide units for formal test and evaluation. The procurement of the Multi-Spectral Image Processor (MSIP) was approved by the Army. The acquisition of the MSIP relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible. Existing DTSS units will be upgraded to a 5-ton ISO 20 foot shelter configuration. The upgraded 5-ton systems will provide an integrated capability while preserving the Army's investment in the DTSS. Program Management responsibility and milestone decision authority have been assigned to the Program Executive Officer for Command, Control, and Communications Systems (PEO C3S). Project management is provided by the Project Director (PD) for Combat Terrain Information Systems. The contracting strategy for the DTSS/QRMP program is to execute the EMD phase through the current SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was awarded for the CTIS SE&I contract. A competitively awarded, Firm Fixed Price (FFP) contract is anticipated for the Full Rate Production of the DTSS/QRMP. Upgrades to the existing DTSS units will also be accomplished through the CTIS SE&I contract. The computer workstations for CTIS programs are being procured through the PM for Common Hardware and Software.

Project D579

Page 1 of 5 Pages

Exhibit R-2 (PE 0604716A)

830

Item 84

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604716A Terrain Information - Engineering

D579

Development (TIARA)

FY 1996 Accomplishments:

- 2000 Completed development of DTSS Upgrade
- 5674 Continued development of downsized DTSS /QRMP
- 600 Continued P3I Program (Interoperability)
- 235 Initiated test and evaluation of EMD Prototypes
- Total 8509

FY 1997 Planned Program:

- 5469 Complete development of downsized DTSS/QRMP
- 500 Conduct test and evaluation of EMD Prototypes
- 1000 Initiate P3I development for DTSS/QRMP
- 175 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 7144

FY 1998 Planned Program:

- 2942 Continue P3I development for DTSS/QRMP - communications and ABCS interoperability
- Total 2942

FY 1999 Planned Program:

- 2686 Continue P3I development for DTSS/QRMP - communications and ABCS interoperability.
- Total 2686

B. Project Change Summary

FY 1997 Presidents Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
8728	7369	3108	2877
8817	7144		
-308			
8509	7144	2942	2686

C. Other Program Funding Summary

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
6736	6417	7465	8405	10607	9831	4763	6268	Compl	Cost
								Cont	Cont

OPA - KA2550 - DTSS

Project D579

Page 2 of 5 Pages

Exhibit R-2 (PE 0604716A)

831

Item 84

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)												
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		February 1997		PROJECT				
5 - Engineering and Manufacturing Development		0604716A Terrain Information - Engineering Development (TIARA)						D579				
D. Schedule Profile		FY 1996		FY 1997		FY 1998		FY 1999				
	1	2	3	4	1	2	3	4	1	2	3	4
Delivery of DTSS/QRMP Build 1 S/W												
Delivery of Enhanced DTSS-MSIPs		X*										
Initiated DTSS (Heavy) Upgrades			X*									
Complete DTSS (Heavy) Upgrades				X*								
Start Downsize DTSS/QRMP												
Developmental Test and Evaluation/												
Operational Test and Evaluation												
(DT&E/OT&E)												
Initiate Fielding of Upgraded DTSS												
Downsize DTSS/QRMP Milestone III												
Award DTSS/QRMP Production Contract												
Conduct Production Verification Testing												
of Downsize DTSS/QRMP												
Initiate Fielding of Downsize												
DTSS/QRMP												
*Milestone Complete												
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Project D579

Page 3 of 5 Pages

Exhibit R-2 (PE 0604716A)

832

Item 84

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604716A Terrain Information - Engineering

PROJECT

D579

<u>A. Project Cost Breakdown</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Primary System Development	3358	1800	500	500
Software Development	2508	2272	1300	1100
Government Furnished Equipment	150	500	30	30
Government Engineering Support (includes Test Support)	632	1044	300	229
Contractor Engineering Support	900	500	300	300
Licenses and Maintenance	11	30	12	27
Project Management and Administration	950	823	500	500
SBIR/STTR		175		
Total	8509	7144	2942	2686

B. Budget Acquisition History and Planning Information

Performing Organizations

[illegible]

Page 4 of 5 Pages

833

UNCLASSIFIED

Item 84

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)											
BUDGET ACTIVITY					DATE		PROJECT				
5 - Engineering and Manufacturing Development					February 1997		D579				
PE NUMBER AND TITLE					0604716A Terrain Information - Engineering Development (TIARA)						
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996*	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete Cont	Total Program
MITRE Corp	FFRDC thru					500	350	200	200		1250
McLean, VA	CECOM					397	544	300	200		1441
OGAs	MIPR					235	500		29		764
Test and Evaluation Organizations											
TECOM	MIPR										
Government Furnished Property											
Contract											
Item Description	Method/Type or Funding Vehicle	Award of Obligation Date	Delivery Date	Total Prior to FY 1996*	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete Cont	Total Program	
Product Development Property	REQS	VAR	VAR	300	150	500	30	30	0	450	
SUN's (ECS)				0						560	
TBD											
Support and Management Property: None											
Test and Evaluation Property: None											
Subtotal Product Development				47057	6977	5600	2342	2157		64133	
Subtotal Support and Management					1297	1044	600	500		3441	
Subtotal Test and Evaluation					235	500		29		764	
Total Project				47057	8509	7144	2942	2686		68338	
*NOTE: Prior year funding only covers the Prime Contractors.											
Project D579					Page 5 of 5 Pages					Exhibit R-3 (PE 0604716A)	

*NOTE: Prior year funding only covers the Prime Contractors.

Project D579

Page 5 of 5 Pages

Exhibit R-3 (PE 0604716A)

834

Item 84

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604726A Integrated Meteorological System
(IMETS) (TIARA)

PROJECT

DD85

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DD85 Integrated Meteorological System (IMETS)	0	0	1946	1931	2398	1851	0	0	0	8126

A. Mission Description and Budget Item Justification: This program element, Integrated Meteorological System (IMETS), funds the development of the IMETS evolving upgrades to the IMETS Block II, integrating the Defense Information Infrastructure (DII) and Common Operating Environment (COE). The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effect forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system consisting of a standard shelter and vehicle, and Army Common Hardware and Software of the Army Battle Command System which will be operated by Air Force weather personnel and maintained within planned Army support for systems and components IAW AR115-10/AFR 105-3. This project supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The IMETS Block III development program will build on the Block II initiative including conversion to the DII and the Army C4I Technical Architecture. The IMETS NDI acquisition strategy has proven successful in the fielding of eleven systems since program initiation in FY92. This development strategy will be continued to include software modules as they mature and become part of the COE library. A common map server update is of primary focus along with increased user distributed communication environment interoperability. Weather tactical decision aid upgrades and updated forecaster aids will be developed to include products from the Air Force initiative of the High Resolution Weather Satellite Receiver, the Small Tactical Terminal for Defense Meteorological Satellite Program (DMSP) and high resolution domestic and foreign weather satellite data. Weather Application modules from the Army Research Laboratory will be integrated and fielded as a capability upgrade to the current software baseline.

FY 1996 Accomplishments: Project not funded in FY 96.

FY 1997 Planned Program: Project not funded in FY 97.

FY 1998 Planned Program:

- 1000 Develop, investigate and apply advanced technologies to the IMETS prototype for expanded capabilities and performance in the area of battlescale forecast modeling, addition to the Integrated Weather Effects Decision Aid, evaluation of the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database.
- 946 Evaluate, configure and integrate high performance expanded tech base prototype capabilities into operational IMETS prototypes
- 1946

Project DD85

Page 1 of 4 Pages

Exhibit R-2 (PE 0604726A)

835

Item 85

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
5 - Engineering and Manufacturing Development		0604726A Integrated Meteorological System (IMETS) (TIARA)								DD85		
<u>D. Schedule Profile</u>		FY 1996		FY 1997		FY 1998		FY 1999				
1		2	3	4	1	2	3	4	1	2	3	4
Develop visibility, thunderstorm and turbulence model												X

Project DD85

Page 3 of 4 Pages

Exhibit R-2 (PE 0604726A)

837

Item 85

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		February 1997			
5 - Engineering and Manufacturing Development		0604726A Integrated Meteorological System (IMETS) (TIARA)				PROJECT DD85			
A. Project Cost Breakdown									
Systems Development									
Project Management									
Matrix Management									
Test									
Total									
B. Budget Acquisition History and Planning Information:									
Performing Organizations									
Contractor or									
Government									
Performing									
Activity									
Product Development Organizations									
Logicon									
ARL									
Misc. Contracts									
Support and Management Organizations									
CECOM									
Test and Evaluation Organizations: None									
Government Furnished Property: None									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project DD85

Page 4 of 4 Pages

Exhibit R-3 (PE 0604726A)

838

Item 85

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604739A JTT/CIBS-M (TIARA)

D702

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D702 Common Integrated Broadcast Service-Modules	0	4765	4499	4447	4426	4409	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Integrated Broadcast Service (IBS) is the worldwide, DoD standard network for transmitting tactical and strategic intelligence and targeting data. The Common Integrated Broadcast Service - Modules (CIBS-M) Joint Program (all services and SOCOM) was created to consolidate and replace existing IBS receiver functionality/capability, inherent with the duplicative existing systems, with a "common family" of IBS modules (both hardware and software). This is a FY 97 new start required to implement the IBS plan and consolidate/eliminate duplication of effort previously spread across multiple PEs/SSNs DoD wide. This program funds design, development, test and evaluation of initial CIBS hardware and software modules, as well as implementing performance expanding modifications to the family of CIBS-M equipment. This program element supports development efforts in the Engineering and Manufacturing development phases of the Acquisition Strategy and is therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: The CIBS-M family of modules will be the sole provider of IBS Modules to a variety of IBS receivers across all DOD component agencies. The Joint Program will competitively develop hardware and software modules and procure the required modules for integration into host receiver (e.g. MATT, CTT, TRE) systems. Additionally, this line provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols.

FY 1996 Accomplishments: Project not funded in FY 96.

FY 1997 Planned Program:

- 3359 Develop CIBS Module discrete designs and combinations
- 911 Develop DAMA Compliant CIBS-M software module
- 378 Integrate and Test DAMA Compliant software module
- 117 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 4765

FY 1998 Planned Program:

- 1450 Complete CIBS-Module prototype fabrication
- 1644 Complete CIBS-Module Development
- 1405 Host system integration/test
- Total 4499

Project D702

Page 1 of 3 Pages

Exhibit R-2 (PE 0604739A)

839

Item 86

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604739A JTT/CIBS-M (TIARA)

PROJECT

D702

FY 1999 Planned Program:

- | | | |
|---|------|--|
| ● | 2800 | Design Next Generation CIBS-Modules |
| ● | 799 | Design/Develop "Over the Air" Software Load Capability |
| ● | 848 | Host System Integration/Test |
| | 4447 | Total |

B. Project Change Summary

FY 1997 Presidents Budget	0	4867	4845	4819
Appropriated Value	0	4765		
Adjustments to Appropriated Value	0			
FY 1998 Pres Bud Request	0	4765	4499	4447

C. Other Program Funding Summary

V29600 JTT/CIBS-M (Tiara)	29076	18991	11438	11703	25527	26450	12904	13554	Cont
BA 1081 Integrated Broadcast Terminal Mod (Tiara)	0	3361	3294	932	0	0	0	0	7587

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
D. <u>Schedule Profile</u>	1	2	4	1
	2	3	4	3
		1	2	2
		4	3	1
			1	3

Award CIBS-M Contract
DAM Module Design Review
Prototype Test

Initial CIBS Module

Preliminary Design Review
Critical Design Review
Prototype Test

Next Generation

Next Generation Module

- Preliminary Design Review
- Critical Design Review
- Prototype Test

Project D702

Page 2 of 3 Pages

Exhibit R-2 (PE 0604739A)

840

Item 86

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604739A JTT/CIBS-M (TIARA)

D702

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	
Hardware Development		2492	693	850	
Software Development		1211	1645	2471	
Host System Integration		0	1405	848	
Technical Test		740	541	173	
Project Management		205	215	105	
SBIR/STIR		117			
Total		4765	4499	4447	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contract

Government

Performing

Activity

Product Development Organizations

TBD

C/PFF Feb 97

SBIR/STTR

Support and Management Organizations

CECOM

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project Office

EAC

FY 1996

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

13069

117

525

4342

4284

215

4342

4447

13186

525

13711

Project D702

Page 3 of 3 Pages

Exhibit R-3 (PE 0604739A)

841

Item 86

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604740A Tactical Surveillance System - Engineering Development								D661	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D661	Suite of Survivability Enhancements System	2954	0	0	0	0	0	0	0	0	2954
<p>Mission Description and Budget Item Justification: This program element which involves the Suite of Survivability Enhancements Systems (SSES) program is a Horizontal Technology Integration (HTI) effort to develop, produce and apply an integrated suite of common electronic sensors and countermeasures to Army ground combat vehicles. SSES will protect Army vehicles by providing advance warning of attack and activating countermeasures which will obscure our vehicles and jam, decoy or deflect enemy munitions. The first phase of the SSES program will field Laser Warning Receivers (LWR) to Bradley A3 vehicles. Initially, AN/AVR-2A Laser Warning Receivers, currently in production for Army aviation platforms, will be modified for ground vehicle use. In addition, a Commander's Decision Aid (CDA) will be developed that will integrate current and future sensors and countermeasures to provide manual, semiautomatic and automatic activation of countermeasures. The next phase of the SSES program will field Missile Warning Receivers to Bradley A3 vehicles. Additional phases of this program are contemplated which will provide additional countermeasures to the suite, and field the suite to other vehicles. This PE supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: Follow-on to existing contracts.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 1400 Modified 3 vehicle sets of AN/AVR-2A's • 1000 Initiated integration of Laser Warning Receiver into Bradley A3 • 444 Provided Technical Support to SSES • 110 Designed Integration (GDLS) Total 2954 <p>FY 1997 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs</p> <p>FY 1998 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs</p> <p>FY 1999 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs</p>											

Project D661

Page 1 of 3 Pages

Exhibit R-2 (PE 0604740A)

842

Item 87

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604740A Tactical Surveillance System -
Engineering Development

D661

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 President's Budget Request

FY 1996

0

2844

110

2954

FY 1999

0

0

0

0

C. Other Program Funding Summary: Not Applicable**D. Schedule Profile**

FY 1996

2

3

X*

FY 1997

2

3

FY 1998

2

3

FY 1999

2

3

4

Milestone Decision Authority IPR
Laser Warning Receiver Modification
Bradley A3 A-Kit Development

* Milestones Completed

Project D661

Page 2 of 3 Pages

Exhibit R-2 (PE 0604740A)

843

Item 87

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604740A Tactical Surveillance System - Engineering Development

PROJECT

D661

<u>A. Project Cost Breakdown</u>	<u>FY 1996</u>
Technical Support	242
Program Management Support	203
Contract - Hughes, UDLP, GDLS	2509
Total	2954

B. Budget Acquisition History and Planning Information

Performing Organizations

	Contract	Award or Obligation <u>Date</u>	Performing Activity <u>EAC</u>	Project Office <u>EAC</u>	Total Prior to FY 1996
	Method/Type or Funding <u>Vehicle</u>				
Contracting or Government Performing Activity					

Product Development Organizations

	Prod/FFP	Jun 96	1400
Hughes	CPFF	Jun 96	1000
UDLP	CPFF	Aug 96	1400
GDLS	CPAF	Aug 96	1000
Camber			

Support and Management Organizations

PM ASI	MIPR	Jun 96	168
Survivac	MIPR	Aug 96	15
CECOM	MIPR	Jun 96	100
SLAD, NM	MIPR	Jul 96	100
STRICOM, FL	MIPR	Jul 96	42
TARDEC	MIPR	Jun 96	20

Test and Evaluation Organizations: None

Test and Evaluation Organizations: None
Government Furnished Property: None
Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

Project D661

Page 3 of 3 Pages

Exhibit R-3 (PE 0604740A)

844

Item 87

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604741A Air Defense Command, Control, Intelligence - Engineering Development									
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	21810	20031	18350	6698	7635	8536	22163	19204	Continuing	Continuing
D126	FAAD Command and Control Engineering Development	18966	20031	18350	6698	7635	8536	22163	19204	Continuing	Continuing
D146	Air Defense Tactical Operations Center	2844	0	0	0	0	0	0	0	Continuing	Continuing
<p>Mission Description and Budget Item Justification: The Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) System provides critical forward area air defense automated information to support the command and control decision process at various levels of command. The mission is to collect, digitally process and disseminate target information, air threat warning, and command and control information to all FAAD weapons [AVENGER, Bradley STINGER Fighting Vehicle (BSFV), Manportable Air Defense System (MANPADS), and combined arms]. Unique FAAD C2I software will provide the mission capability by integrating FAAD C2 engagement operations software using Common Hardware/Software (CHS), Standard Integrated Command Post System (SICPS), Enhanced Position Location Reporting System (EPLRS), Joint Tactical Information Distribution System (JTIDS), Single Channel Ground and Air Radio System (SINCGARS), Light and Special Division Interim Sensor (LSDIS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Ground Based Sensor (GBS), and the Army Battle Command System (ABCS) architecture. The projects in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

PROJECT

D126

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D126 FAAD Command and Control Engineering Development	18966	20031	18350	6698	7635	8536	22163	19204	Continuing	Continuing

A. Mission Description and Justification: Project D126 - FAAD Command and Control Eng Dev: The Forward Air Defense Command and Control (FAAD C2)

System is an automated system deployed with FAAD weapons to provide accurate and timely command, control and targeting information for the weapon systems. The system utilizes non-developmental item sensors, computers, displays and interface hardware integrated with data communication equipment. It automates mission related functions and uses the Single Channel Ground and Airborne Radio Systems (SINCGARS) for voice and the Army Data Distribution System (ADDS) for data.

Acquisition Strategy: The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the advancing technologies. The concept of evolutionary software development is being followed and will be accomplished in Blocks - I, II, III and IV. Blocks I and II have been completed. Block III is currently being developed.

FY 1996 Accomplishments:

- 18100 Continued Block III Software Development
- 400 Prepared for Block III Users Test
- 466 Prepared for Technology Insertion
- Total 18966

FY 1997 Planned Program:

- 1877 Conduct Block III Users Test (UT)
- 17447 Continue Block III Software Development
- 300 Prepare for Block III Development Test (DT)
- 407 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 20031

FY 1998 Planned Program:

- 2499 Digitization integration
- 15751 Continue Block III development
- 100 Block III System Certification Test
- Total 18350

Project D126

Page 2 of 7 Pages

Exhibit R-2 (PE 0604741A)

846

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

D126

FY 1999 Planned Program:

- 100 System Certification Test
- 1201 Complete Block III SW development
- 3247 Digitization integration
- 2150 Begin Block IV development
- Total 6698

B. Project Change Summary

FY1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

Change Summary Explanation: Funding: FY98 (+3406) 2499 for digitization; 907 for Blk III SW development/FY99 (+4656) 3247 for digitization; 1409 to initiate Blk IV SW development

FY 1996	F 1997	FY 1998	FY 1999
19281	20516	14944	2042
19474	20031		
-508			
18966	20031	18350	6698

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, DE10 - SENTINEL GBS	500				6094	9589	9289			25472
OPA 2, WK5053 - SENTINEL GBS	61882	68783	41014	40071	34283	51545	16688	34206	CONT	CONT
OPA 2, AD5050 - FAAD C2	42880	36715	13080	8262	0	0	0	8261	0	135157
OPA 2, AD5070 - AD TAC OPNS CTR							14779	14844	CONT	CONT
Spares (BA9702/MA9702/BS9702) - FAAD C2	1600	1259	1555	885	0	0	0		0	9617
Spares (BS973BS97322) - SENTINEL GBS	2324	3610	5258	5382	0	0	0	0	0	16920

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
First Unit Equipped Block II	1	2	3	4	1	2	3	4		
System Certification Test	X*									
System Certification Test										
System Certification Test										
First Unit Equipped - Objective System										
*Denotes completed milestone										

Project D126

Page 3 of 7 Pages

Exhibit R-2 (PE 0604741A)

847

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY:

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

D126

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	Total
Major Contracts	15405	15301	14821	4949	
Support Contract	500	1000	1000	200	
PMO/In-house/Other	2542	2414	2229	1249	
GFE/Testing	519	909	300	300	
SBIR/STTR		407			
Total	18966	20031	18350	6698	

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

TRW	C/CPIF	Sep 86	176461	176461							176461
TRW	SS/CPIF	Aug 92	32206	32206							32206
TRW	SS/CPIF	Sep 94	53194	53194	7700	14200	13311	12821	4949	CONT	52981
TRW	SS/T&M	Sep 93	4900	4900	1000	1205	1888	2000		CONT	6093
Matrix (RDEC)	MIPR				2163	1188	1072	1130	554	CONT	6107
SBIR/STTR							407				407

Support and Management Organizations

SETA, CAS	SS/CPFF	Feb 91	10879	10879							10879
In-House/ Other					6108	1854	2343	2099	895	CONT	13299

Test and Evaluation Organizations

ADATD, Ft Bliss					8687	319	810	100	100	CONT	10016
OPTEC					2000						2000

Project D126

Page 4 of 7 Pages

Exhibit R-3 (PE 0604741A)

848

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1997	PROJECT			
BUDGET ACTIVITY		PE NUMBER AND TITLE					D126			
5 - Engineering and Manufacturing Development		0604741A Air Defense Command, Control, Intelligence - Engineering Development								
Government Furnished Property										
Contract										
Item	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS	MIPR			400	200	200	200	200	CONT	1200
JTIDS	MIPR	1988		6000					0	6000
Support and Management Property: None										
Test and Evaluation Property: None										
Subtotal Product Development										281455
Subtotal Support and Management										24178
Subtotal Test and Evaluation										12016
Total Project										317649

Project D126

Page 5 of 7 Pages

Exhibit R-3 (PE 0604741A)

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

D146

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D146 Air Defense Tactical Operations Center	2844	0	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: Project D146 - Air Defense Tactical Operations Center: Air Defense Artillery (ADA) requires a standardized, integrated, automated command post (CP) and fire direction center (FDC) capability that will fully interoperate with all US Army and Joint C3I and Air Defense systems, and selected systems of allied nations. These capabilities will be incorporated in an Air Defense Tactical Operations Center (ADTOC). The ADTOC must incorporate air defense and theater missile defense force operations and engagement operations functions into a single command, control, communications and intelligence system. Project D146 finances the direct costs of developing an ADTOC that will be used to provide a single system command, control, communications, and intelligence system that will support the requirements of any air defense weapon system at any echelon of Corps and below.

Acquisition Strategy: The acquisition strategy relies heavily on NDI and existing modules of Army/Joint/DoD software which will be integrated to provide a modular, reconfigurable, standard digital ADTOC for all air defense units, battery to brigade. Brigade ADTOCs will be automated first with expansion to all weapon systems.

FY 1996 Accomplishments:

- 2844 Development and integration studies
- Total 2844

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999
Appropriated Value	968			
Adjustments to Appropriated Value	978			
FY 1998 Pres Bud Request	+1866			
	2844			

Change Summary Explanation: Funding: FY 1996 (+1866) for unfunded ADTOC development.

Project D146

Page 6 of 7 Pages

Exhibit R-2 (PE 0604741A)

850

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

D146

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contracts	2221			
In-house/Other	623			
Total	2844			

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government Method/Type Award or

Performing or Funding Obligation

Activity Vehicle Date

Performing Activity EAC

Project Office EAC

Total Prior to FY 1996

FY 1996 FY 1997 FY 1998 FY 1999

Budget to Complete

Total Program

2221 2221 2221 2221

410 410 410 410

213 213 213 213

2631 2631 2631 2631

213 213 213 213

2844 2844 2844 2844

Total Project

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D146

Page 7 of 7 Pages

Exhibit R-3 (PE 0604741A)

851

Item 88

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604746A Automatic Test Equipment Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	10648	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing
DL59 Diagnostic/Expert System Development	3732	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing
D537 Integrated Family of Test Equipment	6916	0	0	0	0	0	0	0	0	64290

Mission Description and Budget Item Justification: This program element provides for development of modular, reconfigurable automatic test equipment (ATE) to satisfy test and fault isolation requirements across equipment commodities and to meet operational readiness needs of sophisticated systems and state-of-the-art technologies. An urgent requirement exists at all levels of maintenance for ATE to support complex communications and electronics-intensive commodities such as missiles, aircraft, and combat vehicles. The Integrated Family of Test Equipment (IFTE), with improvements as required to keep pace with technologies employed in the supported weapon systems, can meet these mission requirements into the next century. This program element further provides for identification and evaluation of the capabilities of commercial and nondevelopmental items to satisfy requirements for manual and semi-automatic general purpose test, measurement, and diagnostic equipment at the division level. Expert systems and artificial intelligence applications are also being developed under this program element to provide paperless maintenance manuals/procedures and battlefield electronic displays which will reduce the Army's investment in test program sets and in maintenance publications and procedures. These projects are appropriately assigned to Budget Activity 5, since they provide for engineering and manufacturing development of new ATE systems to meet the test and diagnostic requirements of the Army's weapon systems, and for incorporation of state-of-the-art technologies into the Army's ATE systems.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604746A Automatic Test Equipment Development

PROJECT

DL59

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL59 Diagnostic/Expert System Development	3732	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing

A. Mission Description and Justification: This project funds development of expert/diagnostic systems and general purpose test equipment. These systems and equipment are required to overcome existing deficiencies and voids in organic test and diagnostic capabilities and to ensure the operational readiness, accuracy, and effectiveness of the Army's weapons and combat support systems. The project provides for development of diagnostic technologies and state-of-the-art general purpose test equipment for: support to the Army's weapon systems, improvement of general purpose test equipment to meet new testing and technological requirements, market surveys of commercially available general purpose test equipment to determine applicability to Army requirements, evaluations and validations of diagnostic software on targeted hardware, and development/evaluation of test programs sets (TPS) for use with standard automatic test equipment (ATE). Applications of state-of-the-art technologies in expert systems and artificial intelligence, paperless maintenance and troubleshooting manuals, electro-optics displays for battlefield use, and soldier-friendly equipment will be developed to meet identified requirements.

Acquisition Strategy: When the necessary expertise and capability are available within the Department of Defense, services are ordered from the government source; otherwise, commercial contracts are used. Equipment required for development projects is obtained by contract from the commercial supplier. Candidate nondevelopmental items (NDI) and commercial equipment are identified and evaluated through market surveys and bid sample testing.

FY 1996 Accomplishments:

- 1583 Commenced development of software tools for new contact test sets (CTS).
- 140 Performed bench testing of NDI equipment.
- 2009 Performed initial integration and testing of prototype Electro-Optic Test Facility.
- Total 3732

FY 1997 Planned Program:

- 655 Test new CTS hardware.
- 390 Test new state-of-the-art commercial equipment for use in Army test equipment programs.
- 1023 Continue integration and testing of Electro-Optic Test Facility (EOTF).
- 340 Continue development of software tools for new CTS.
- 3444 Complete development of Kiowa Warrior electronic TPS.
- 3500 Commence development/rehost of Apache TPS.
- 223 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 9575

Project DL59

Page 2 of 9 Pages

Exhibit R-2 (PE 0604746A)

853

Item 89

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PROJECT

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment Development

FY 1998 Planned Program:

- | | | |
|--------------|------|---|
| • | 682 | Continue to test new state-of-the-art commercial equipment for use in Army test equipment programs. |
| • | 1200 | Complete integration and testing of EOTF. |
| • | 700 | Complete development of software tools for new CTS. |
| | 2582 | |
| Total | | |

FY 1999 Planned Program:

- | | | |
|---|--------------|---|
| ● | 510 | Continue to test new state-of-the-art commercial equipment for use in Army test equipment programs. |
| ● | 1000 | Develop diagnostic software for use with Army automatic test equipment. |
| ● | 1023 | Evaluate common solutions for Army and other Service test and diagnostic requirements. |
| | 2533 | |
| | Total | |

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

Change Summary Explanation: FY 1996 adjustment reprogrammed for higher priority Army requirements.

C. Other Program Funding Summary

OPA2, K18400, Base Shop Test Facility	35511	17076	4321	17013	34625	5451	4464	1988	Cont	307736
OPA3, MB4001, Base Shop Test Facility									Cont	94364
OPA2, K51600, Contact Test Set	1953	4408								
OPA3, MB4002, Contact Test Set			10507	24164	11432	53308	39380	48894	Cont	
OPA3, MB2201, Electronic Repair Shelter			5678	3789	3787	2975	1716		Cont	17945
OPA2, KA4100, Electro Optic Equipment	3859									3859
OPA3, MB4003, Electro Optic Equipment				14262	5782	5423	8927	8944	Cont	

D. Schedule Profile: Not Applicable.

Project DL59

Page 3 of 9 Pages

Exhibit R-2 (PE 0604746A)

854

Item 89

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1997	PROJECT				
BUDGET ACTIVITY					PE NUMBER AND TITLE		DL59				
5 - Engineering and Manufacturing Development					0604746A Automatic Test Equipment Development						
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations: None											
Government Furnished Property: None.											
Subtotal Product Development					60797	3732	9575	2582	2533		79219
Subtotal Support and Management											
Subtotal Test and Evaluation					60797	3732	9575	2582	2533		79219
Total Project											

Project DL59

Page 5 of 9 Pages

Exhibit R-3 (PE 0604746A)

Project DL59

Page 5 of 9 Pages

Exhibit R-3 (PE 0604746A)

856

Item 89

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment
Development

D537

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D537 Integrated Family of Test Equipment	6916	0	0	0	0	0	0	0	0	64290

A. Mission Description and Justification: This project provides for development and upgrade of automatic test equipment (ATE) to support electronics-intensive weapon systems at all maintenance levels. The IFTE systems will automatically test and verify the operation of line replaceable units and screen shop replaceable units through use of test program sets (TPS) and software developed or upgraded under this project.

Acquisition Strategy: When the necessary expertise and capacity are available within the Department of Defense, services are ordered from the government source; otherwise, commercial contracts are used.

FY 1996 Accomplishments:

- 3738 Developed/modified TPS for Kiowa Warrior improved processors
- 54 Rehoused TPSs for use with Electronic Repair Shelter
- 1999 Developed/rehoused Kiowa Warrior and Apache TPSs for use with the Electro-Optics Test Facility
- 1125 Developed software interface for Contact Test Set, Soldier Portable On-System Repair Tool (CTS SPORT) with automated logistics systems.
- Total 6916

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustment to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
9727	0	0	0
10000			
-3084			
6916	0	0	0

Change Summary Explanation: FY 1996 adjustment reprogrammed for higher priority Army requirements.

Project D537

Page 6 of 9 Pages

Exhibit R-2 (PE 0604746A)

857

Item 89

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										
5 - Engineering and Manufacturing Development		0604746A Automatic Test Equipment Development									D537	
C. Other Program Funding Summary												
OPA2, K18400, Base Shop Test Facility	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost		
OPA3, MB4001, Base Shop Test Facility	35511	17076								307736		
OPA2, K51600, Contact Test Set			4321	17013	34625	5451	4464	1988	Cont	94364		
OPA3, MB4002, Contact Test Set	1953	4408										
OPA3, MB2201, Electronic Repair Shelter			10507	24164	11432	53308	39308	48894	Cont	17945		
OPA2, KA4100, Electro Optic Equipment			5678	3789	3787	2975	1716			3859		
OPA3, MB4003, Electro Optic Equipment	3859			14262	5782	5423	8927	8944	Cont			
D. Schedule Profile: Not Applicable.												

Project D537

Page 7 of 9 Pages

Exhibit R-2 (PE 0604746A)

Project D537

Page 7 of 9 Pages

Exhibit R-2 (PE 0604746A)

858

Item 89

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604746A Automatic Test Equipment Development				
		Total				
		Prior to			Budget to	Total
		FY 1996	FY 1997	FY 1998	FY 1999	Program
		57374	6916			64290
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project		57374	6916			64290

Project D537

Page 9 of 9 Pages

Exhibit R-3 (PE 0604746A)

860

Item 89

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	15631	20895	9242	18603	15974	16466	16914	Continuing	Continuing
DC73 Synthetic Theater of War	0	10033	5837	0	0	0	0	0	0	15870
DC74 Developmental Simulation Technology	0	2577	2436	3008	3525	3593	3702	3801	Continuing	Continuing
DC77 Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Continuing	Continuing
DC78 Computer Generated Forces*	0	0	4000	2010	5986	3990	3984	4185	Continuing	Continuing

*Project DC78 is not a new start, but rather a realignment of funds from Interactive Simulation (DC77) to more appropriately identify/manage accomplishments of Computer Generated Forces as determined by the Army Modeling Simulation Office (AMSO).

Mission Description and Budget Item Justification: Distributed Interactive Simulation (DIS) is a synthetic environment within which humans may interact through a systematic connection of different subcomponent simulations, simulators and/or instrumented live task forces. These DIS components may reside at multiple and distant locations, using different simulation equipment, tied together through use of a standard communication architecture. This Program Element provides for the engineering development and application of DIS technology to electronically link all subcomponents together to recreate a scaleable battlefield, both horizontally and vertically. The synthetic environment is used to verify the scenarios, tactics/techniques and procedures, train testers on new hardware/software and conduct trial test runs before costly live field tests. Project DC73, Synthetic Theater of War, supports engineering development and integration of the Synthetic Theater of War-Army (STOW-A) and Force XXI. Project DC74, Developmental Simulation Technology, provides engineering development of DIS tools, techniques, standards and applications in support of the Army's Core DIS Facilities (CDF) at Forts Knox, Benning and Rucker, and the Operational Support Facility in Orlando, FL. Project DC77, Interactive Simulation, focuses on engineering development of techniques and technology for DIS and related simulations and simulator efforts. Project DC78 develops and upgrades computer generated forces software systems which support experimentation, concept evaluation, materiel development and training. Work done on this program will have benefit across the Army and DoD by providing standards for interoperability and software reuse in this emerging domain. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition cycle and therefore is correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604760A Distributive Interactive Simulations -
Engineering Development

PROJECT

DC73

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC73 Synthetic Theater of War	0	10033	5837	0	0	0	0	0	0	15870

A. Mission Description and Justification: Project DC73 - Synthetic Theater of War: This project supports engineering development and integration of the Synthetic Theater of War (STOW) and Force XXI. Development focuses on leveraging existing and emerging technology in a manner that produces substantial and continual improvements in combat readiness through the use of full spectrum, high fidelity, distributed simulation capability to support a large scale DIS user based exercise/experiment for JOINT VENTURE training and analytical needs.

Acquisition Strategy: Development and procurement through delivery orders to competitively selected contractors providing Systems Engineering and Integration and Advanced Development Simulation Technology, based on performance specifications.

FY 1996 Accomplishments: Project not funded

FY 1997 Planned Program:

- 2997 Develop and apply distributed simulation technology to support the Synthetic Theater of War.
- 1330 Conduct Army Model and Simulation assessment and develop an interactive database catalog of Army systems and their characteristics.
- 5461 Develop and integrate emerging simulation technology in support of Force XXI training program.
- 245 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 10033

FY 1998 Planned Program:

- 4837 Continue development of distributed simulation technology to support the Synthetic Theater of War.
- 1000 Develop and integrate emerging simulation technology in support of Force XXI training program.
- Total 5837

FY 1999 Planned Program: Project not funded in FY 99.

Project DC73

Page 2 of 15 Pages

Exhibit R-2 (PE 0604760A)

862

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC73

A. Project Cost Breakdown	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Systems Engineering & Integration		2868	4043	
Hardware Design & Development		1750	490	
Reliability, Availability and Maintainability		738	920	
Training Support Packages		4027	0	
Verification, Validation & Accreditation		405	384	
SBIR/STTR		245		
Total		10033	5837	

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Lockheed-Martin, Orlando, FL	DO/CPAF	Nov 96	6089	6089	0	0	2849	3240	0	0	6089
Cubic Applications Inc., Lacey, WA	DO/CPIF	Jan 97	TBD	1330	0	0	1290	0	0	0	1290
ARI, Alexandria, VA	DO/CPIF	Feb 97	TBD	4710	0	0	3747	963	0	0	4710
Support and Management Organizations											
SBIR/STTR							245				245
Miscellaneous	Various	Various	2707	2707	0	0	1497	1250	0	0	2747
Test and Evaluation Organizations	Various	Various	789	789	0	0	405	384	0	0	789

Project DC73

Page 4 of 15 Pages

Exhibit R-3 (PE 0604760A)

864

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
5 - Engineering and Manufacturing Development	0604760A Distributive Interactive Simulations - Engineering Development			DC73	
	Total				
	Prior to			Budget to	Total
	FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
				Complete	Program
Subtotal Product Development		8131	4203	12334	2747
Subtotal Support and Management		1497	1250	789	15870
Subtotal Test and Evaluation		405	384		
Total Project		10033	5837		

865

UNCLASSIFIED

Item 90

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								DC74	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC74	Developmental Simulation Technology	0	2577	2436	3008	3525	3593	3702	3801	Continuing	Continuing
<p>A. Mission Description and Justification: Project DC74 - Developmental Simulation Technology: This project supports the Core Distributed Interactive Simulation (DIS) Facilities (CDF) at Fort Knox, KY, Fort Rucker, AL, Fort Benning, GA and the Operational Support Facility in Orlando, FL, which provide virtual combined arms battlefield with the warfighter-in-the-loop to evaluate weapon system concepts, tactics, doctrine and test plans.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.</p> <p>FY 1996 Accomplishments: Development activities funded in PE 0604759A, Major Test and Evaluation, Project DC55, Distributive Dev Simulation Technology.</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 1150 Develop DIS tools such as exercise conduct and visual systems generation, which enable combat, materiel and training developers and testers to perform experiments to test tactics, doctrine and weapon design. • 1364 Continue development and systems integration of new and emerging equipment and software technology for use in the Core DIS Facilities. • 63 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. <p>Total 2577</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 900 Develop Dismounted Warrior Network which will integrate technologies to provide dismounted and small unit simulation capability to support experimentation, concept evaluation, and materiel acquisition. • 850 Continue development of tools which provide improved capabilities for experiment and exercise generation and after-action analysis. • 686 Continue development and systems integration of new and emerging equipment and software technology for use in the Core DIS Facilities. <p>Total 2436</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 3008 Continue development of Advanced Distributed Simulation Technology support which enables combat, materiel and training developers and testers to perform experiments to test tactics, doctrine and weapon design. <p>Total 3008</p>											

Project DC74

Page 6 of 15 Pages

Exhibit R-2 (PE 0604760A)

866

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC74

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud

FY 1996	FY 1997	FY 1998	FY 1999
0	2632	2615	3249
0	2577		
0	0		
0	2577	2436	3008

C. Other Program Funding Summary

RDTE, A Budget Activity 5, PE 0604715A,
Project DC91, Distr Interactive Simulation
RDTE, A Budget Activity 5, PE 0604760A,
Project DC77, Interactive Simulation
OPA3, KA6000, Reconfigurable Simulators
OMA, Reconfigurable Simulators

FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
5685	0	0	0	0	0	0	0	0	9370
0	3021	8622	4224	9092	8391	8780	8928	Cont'd	Cont'd
12222	13825	13823	12803	8997	8282	4960	4969	Cont'd	Cont'd
12100	10899	10070	7150	6650	8150	11950	11950	Cont'd	Cont'd

D. Schedule Profile

Advanced Distributed Simulation
Technology (ADST) II Delivery Order
Contract Award

FY 1996	FY 1997	FY 1998	FY 1999
1	2	3	4
2	3	4	1
3	4	1	2
4	1	2	3
	4	1	2
	X*	3	4
		4	1
		X	2
			3
			4

FY 1996	FY 1997	FY 1998	FY 1999
1	2	3	4
2	3	4	1
3	4	1	2
4	1	2	3
	4	1	2
	X*	3	4
		4	1
		X	2
			3
			4

*Milestone Complete

Project DC74

Page 7 of 15 Pages

Exhibit R-2 (PE 0604760A)

867

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC74

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	
Systems Engineering & Integration	0	1689	1486	1847	
Primary Hardware Development	0	425	600	675	
Reliability, Availability and Maintainability	0	400	350	486	
SBIR/STTR		63			
Total		2577	2436	3008	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Performing

Activity

EAC

EAC

Total

Prior to

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Program

Program

Program

Program

Program

Program

Program

Program

Program

Project DC74

Page 8 of 15 Pages

Exhibit R-3 (PE 0604760A)

868

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								DC77	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC77	Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Continuing	Continuing
<p>A. Mission Description and Justification: Project DC77 - Interactive Simulation: This project focuses on engineering development of techniques and DIS technology of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Development also supports related simulations and simulator efforts, including the Battlelab Reconfigurable Simulators. Development activities associated with this project were budgeted in Program Element 0604715A, Non-System Training Devices Engineering Development, Project DC91, Distributive Interactive Simulation, in FY 1995 and FY 1996.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications</p> <p>FY 1996 Accomplishments: Funded under Project DC 91, Distributive Interactive Simulation, PE 0604715A</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 508 Provide systems engineering and develop standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment. • 450 Develop software upgrades/enhancements to support the re-architecture of modular semi-automated forces (MODSAF) computer generated forces system. • 1989 Continue development of the Ground, Early Entry Operations, and Aviation Battlelab Reconfigurable Simulators. • 74 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. <p>Total 3021</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1087 Provide systems engineering and continue development of standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment. • 6535 Continue development of the Aviation, C4I and Dismounted Infantry Battlelab Reconfigurable Simulators. • 1000 Develop improved representation of C4I and environmental effects in the synthetic environment <p>Total 8622</p>											

Project DC77

Page 9 of 15 Pages

Exhibit R-2 (PE 0604760A)

869

Item 90

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604760A Distributive Interactive Simulations -

**PROJECT
DC77**

- 2424 Provide systems engineering and continue development of standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment.
- 1000 Continue development of the C4I and Dismounted Infantry Battlelab reconfigurable simulators.
- 800 Develop dynamic terrain and mobility models for use by the simulation community.

B. Project Change Summary

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
0	3086	10956	6737

3021

0

3021

Change Summary Explanation:
Funding: FY 98(-2334)/FY 99(-2513) funds moved to Computer Generated Forces (DC78) for central management/accomplishment identity as determined by the Army Modeling Simulation Office (AMSO).

C. Other Program Funding Summary										
	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604715A,	5685	0	0	0	0	0	0	0	0	9370
Project DC91, Distr Interactive Simulation										
OPA3, KA6000, Reconfigurable Simulators	12222	13825	13823	12803	8997	8282	4960	4979	Cont'd	Cont'd
OMA, Reconfigurable Simulators	12100	10899	10070	7150	6650	8150	11950	11950	Cont'd	Cont'd

	FY 1996				FY 1997				FY 1998				FY 1999				
1	1	2	3		4	1	2	3	4	1	2	3	4	1	2	3	4

Advanced Distributed Simulation

Software Engineering Institute (SEI) X* X X

Page 10 of 15 Pages

Item 90

870

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								DC77			
		FY 1996		FY 1997		FY 1998		FY 1999					
D. Schedule Profile		1	2	3	4	1	2	3	4	1	2	3	4
BLRSI (Battlelab Reconfigurable Simulator) Option Contract Award						X*							
* Milestones Complete													

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE	PROJECT		
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development				February 1997	DC77		
A. Project Cost Breakdown									
Systems Engineering & Integration		FY 1996	FY 1997	FY 1998	FY 1999				
Develop DIS tools, techniques, standards			500	1337	2324				
Reconfigurable Simulator Hardware/Software Development			458	750	900				
SBIR/STTR			1989	6535	1000				
Total			74						
			3021	8622	4224				
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998
									Budget to Complete
Product Development Organizations									
Hughes Training Inc., Orlando, FL	CPIF	Feb97	TBD		TBD	0	0	487	4456
Lockheed-Martin, Orlando, FL	DO/CPAF	Oct96	TBD		TBD	0	0	886	2021
Support and Management Organizations									
Miscellaneous SBIR/STTR	Various	Various	TBD		TBD	0	0	1349	1725
Test and Evaluation Organizations									
Miscellaneous	Various	Various	TBD		TBD	0	0	225	420
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project DC77

Page 12 of 15 Pages

Exhibit R-3 (PE 0604760A)

872

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -

DC78

Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC78 Computer Generated Forces*	0	0	4000	2010	5986	3990	3984	4185	Continuing	Continuing

A. Mission Description and Justification: Project DC78 - Computer Generated Forces: This project provides for the development of software systems to realistically represent activities of units and forces in simulation. This representation is used to support concept evaluation, experimentation, materiel acquisition and training communities. This project funds improvements, new functionality, enhancements and re-architecture of Modular Semi-Automated Forces (ModSAF). Other initiatives include the systems engineering and design for improvements to the architecture and interoperability of Army SAFs, and the evolution to an Army universal computer generated forces system.

Acquisition Strategy: Competitive development leading to competitive procurements against performance specifications.

FY 1996 Accomplishments: Funded within Project DC 91, Distributive Interactive Simulation, PE 0604715A.

FY 1997 Planned Program: Funded within Project DC 77, Interactive Simulation, PE 0604760A.

FY 1998 Planned Program:

- 900 Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
- 2615 Development/re-architecture of ModSAF to provide for High Level Architecture (HLA) and Close Combat Tactical Trainer (CCTT) SAF compatibility.
- 485 Verification and validation of newly integrated software.
- Total 4000

FY 1999 Planned Program:

- 310 Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
- 1420 Continue engineering development of the ModSAF-CCTT Semi-Automated Forces merge.
- 280 Verification and validation of newly integrated software.
- Total 2010

Project DC78

Page 13 of 15 Pages

Exhibit R-2 (PE 0604760A)

873

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC78

A. Project Cost Breakdown

Engineering Development and Integration
Verification and Validation

Total

FY 1996

FY 1997

FY 1998

FY 1999

3515

1720

485

290

4000

2010

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Product Development Organizations

Lockheed-Martin

Inc., Orlando, FL

Support and Management Organizations

Miscellaneous

Test and Evaluation Organizations

Miscellaneous

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project Office

EAC

TBD

TBD

TBD

TBD

TBD

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Project DC78

Page 15 of 15 Pages

Exhibit R-3 (PE 0604760A)

875

Item 90

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT

D909

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D909 Tactical Exploitation of National Capabilities - Eng Dev	23266	15235	19113	19531	26094	25097	28203	28359	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the engineering development/enhancement of the Electronic Tactical User Terminal (ETUT), Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Advanced Electronic Processing Dissemination System (AEPDS) and Tactical Exploitation System (TES). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground/Surface System (CIGSS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, MIES, and ETRAC) into an integrated common baseline; downsized, modular and scalable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D)]. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II and in the Army TENCAP Master Plan. This PE supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The Army Space Program Office (ASPO) strives for an acquisition environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices, and using commercial and government off-the-shelf software, ASPO minimizes risk while maximizing efficiency. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by government and contractor personnel and facilities.

FY 1996 Accomplishments:

- 12102 Continued software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products.
- 606 Completed the retrofit of ETUT with enhanced MITT hardware and software.
- 2356 Continued effort to combine ETUT and EPDS capabilities into AEPDS.
- 900 Completed building/fielding of five additional MITTs.
- 1094 Initiated engineering development of TES.
- 6208 Continued support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support].

Total 23266

Project D909

Page 1 of 5 Pages

Exhibit R-2 (PE 0604766A)

876

Item 91

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	D909	
<p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 4608 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. • 5106 Continue engineering development of TES. • 2197 Complete effort to combine ETUT and EPDS capabilities into AEPDS. • 2958 Continue support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support. • 366 Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) • 15235 Total <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 6965 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with national and theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 8585 Continue engineering development of TES. • 3563 Continue support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support]. • 19113 Total <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 5703 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with national and theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems. • 10405 Continue engineering development of TES. • 3423 Continue support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support]. • 19531 Total <p>Project D909</p>			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

D909

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 BES/Pres Bud Request

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total Cost Cont
	23861	15758	20631						
	24101	15235							
	-835								
	23266	15235	19113		19531				

C. Other Program Funding Summary

RDTE, A Budget Activity 4

PE 0603766A Project D907

TENCAP-Adv Dev

RDTE, D Budget Activity 7

PE 0305154D DARF

PE 0305208D DARF

Other Procurement Army, OPA-2

BZ7315 TENCAP

Procurement, Defense Wide

PE 0305154D DARF

PE 0305208D DARF

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
	26796	25354	20920	23714	24751	29020	30920	31095		
	41526	50287	30433	28175	22214	24108	23583	23179		
	4473	1756	1679	1728	4598	13703	14779	16822		
	80822	89945	0	0	0	0	0	0		
			94070	81600	80576	71867	73926	75239		

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
1	2	3	4	1
	X*			2
				3
				4

Complete Development and Field five

Additional MITTs

Complete Retrofit and Refield ETUTs

Complete and Field DAMA Appliqué into

SUCCESS Radios

Initiate Engineering Development of TES

Install GSD into FAST Systems

Complete AEPDS

X

X*

X*

X

Project D909

Page 3 of 5 Pages

Exhibit R-2 (PE 0604766A)

Item 91

878

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

D909

D. Schedule Profile

FY 1996

FY 1997

FY 1998

FY 1999

1

2

3

4

1

2

3

4

1

2

3

4

1

2

3

4

Initiate integration of GBS into AEPDS/TES

X

Initiate integration of JTT into AEPDS/TES

X

Complete integration of GBS into AEPDS/TES

X

* Milestone completed

Project D909

Page 4 of 5 Pages

Exhibit R-2 (PE 0604766A)

879

Item 91

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT

D909

A. Project Cost Breakdown

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
MITT	900	0		
ETUT	2962	2197		
TES	1094	5106	8585	10405
Common Baseline (*1)	12102	4608	6965	5703
FFRDC	1767	1220	1274	1297
System Engineering (Contractor)	4441	1738	2289	2126
SBIR/STTR		366		
Total	23266	15235	19113	19531

(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARP (PE 0305154D)]

B. Budget Acquisition History and Planning Information: Not Applicable

Project D909

Page 5 of 5 Pages

Exhibit R-3 (PE 0604766A)

880

Item 91

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	190472	161816	202302	129466	146633	126860	65653	22287	0	1797674
D641 BAT	101439	67186	46077	2548	4075	0	0	0	0	948801
D687 BAT P3I	35214	18819	64556	70774	77488	61948	10727	5172	0	359652
D688 ATACMS BLK II	53535	75806	91669	44777	13233	12076	0	0	0	300851
D686 ATACMS BLK IIA	0	0	0	11094	47983	52836	54926	17115	0	183954
D2NT BAT Operational Test	284	5	0	273	3854	0	0	0	0	4416

Mission Description and Budget Item Justification: The BAT system supports the Army's deep fires doctrine that calls for the destruction and disruption of threat forces and long range weapons at ranges in excess of 100 kilometers before they can influence the maneuver battle. In the past, the only options have been to engage these targets with attack helicopters or fixed wing aircraft. While effective, these options place critical resources and their air crews at risk. The BAT system significantly reduces this risk through its autonomous acquisition and terminal guidance capabilities to attack well defended armored forces behind enemy lines. The BAT system includes the BAT submunition, a pre-planned product improvement (P3I) BAT submunition, the Army Tactical Missile System Block II (ATACMS BLK II) missile, and the ATACMS BLK IIA missile. BAT is a dual-sensor (acoustic and infrared) submunition that autonomously seeks out and destroys moving armored vehicles without human interaction. It is an unpowered, aerodynamically stable vehicle, approximately 36 inches long, 5.5 inches in diameter and weighs 44 pounds. BAT and BAT P3I submunitions are carried deep into enemy territory by the two Army TACMS variants, then dispensed over a large target array to selectively attack and destroy individual targets. The BAT P3I program will improve the sensor and warhead subassemblies to increase lethality and to enable the BAT submunition to attack cold, stationary, armored targets and other targets of high value. The ATACMS BLK II missile is a version of the currently fielded and combat-proven Army TACMS Block I missile and is designed to carry 13 BAT or BAT P3I submunitions. The ATACMS BLK IIA missile is an extended range version of the ATACMS BLK II missile and will carry 6 BAT P3I submunitions out to ranges in excess of 200 kilometers. The projects in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT

D641

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	D641 BAT	101439	67186	46077	2548	4075	0	0	0	948801

A. Mission Description and Budget Item Justification: Project D641-BAT: The BAT submunition is an unpowered, aerodynamically stable vehicle approximately 36 inches long, 5.5 inches in diameter, and weighs 44 pounds. The BAT is an acoustic and infrared terminally guided submunition that searches for, tracks, and destroys armored, mobile targets. BAT submunitions are carried deep into enemy territory by a variant of the Army Tactical Missile System (ATACMS Block II), then dispensed over numerous high-payoff targets to selectively attack and destroy individual targets. By utilizing acoustic technology, BAT has the advantage of a large footprint which allows it to compensate for target location errors. Being a certified round, the BAT submunition has a low sustainment cost.

Acquisition Strategy: The BAT system is a sole source EMD program.

FY 1996 Accomplishments:

•	73550	Conducted EMD Program
•	19089	Conducted Carrier Integration Activities and other studies
•	8800	Conducted Test Range and Target Operation, Maintenance and Improvements
Total	101439	

FY 1997 Planned Program:

•	53329	Conduct EMD Program
•	5458	Conduct Carrier Integration Activities and other studies
•	6800	Conduct Test Range and Target Operations, Maintenance and Improvements
•	1599	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	67186	

FY 1998 Planned Program:

•	25432	Procure Operational and Live Fire Test Hardware and Support [90 Low Rate Initial Production (LRIP) units]
•	14910	Support Carrier Flight Testing and Other Integration Activities
•	5535	Conduct Test Range and Target Operation, Maintenance and Improvement
•	200	Studies, development, and validation of future improvement programs
Total	46077	

Project D641

Page 2 of 19 Pages

Exhibit R-2 (PE 0604768A)

882

Item 92

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE		February 1997	D641
		0604768A Brilliant Anti-Armor (BAT) Submunition			
FY 1999 Planned Program:					
•	2313 Conduct Test Range and Target Operation, Maintenance and Improvement				
•	115 Conduct Integration Activities				
•	100 Deliver Operational Test and Live Fire Test Assets				
•	20 Studies, development, and validation of future improvement programs				
Total	2548				
B. Project Change Summary					
FY 1997 President's Budget		FY 1996	FY 1997	FY 1998	FY 1999
Appropriated Value		96324	68622	24789	0
Adjustments to Appropriated Value		99028	67186		
FY 1998 Pres Bud Request		+2411			
		101439	67186	46077	2548
Change Summary: FY 1998 funding adjustment to support procurement of LRIP IOTE test articles and testing (+21288). FY 1999 funding adjustment to support delivery of articles and testing (+2548).					
C. Other Program Funding Summary					
Missile Procurement, Army		FY 1996	FY 1997	FY 1998	FY 1999
CA 6100 BAT					
				85208	100137
				170243	200109
				238948	762459
					1757943
D. Schedule Profile					
Complete Design Verification Test (DVT)	1	2	3	4	1
Complete Wind Tunnel/Sled Tests					
Complete Subsystem Qual					
Initiate Contractor Developmental Test (CDT)					
Complete CDT					
Award LRIP I Contract					
Award LRIP II Contract					
Start LRIP I Deliveries					
* Milestone completed.					

Project D641

Page 3 of 19 Pages

Exhibit R-2 (PE 0604768A)

883

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1997		PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE					
5 - Engineering and Manufacturing Development										0604768A Brilliant Anti-Armor (BAT) Submunition					
A. Project Cost Breakdown															
Contractor Engr Support										FY 1996	FY 1997	FY 1998	FY 1999		
Developmental Test & Evaluation										86665	49509	37655	120		
Program Management Spt										4581	5262	1600	2113		
Program Management Personnel										3775	4356	2223	000		
SBIR/STTR										6418	6460	4599	315		
Total										101439	67186	46077	2548		
B. Budget Acquisition History and Planning Information															
Performing Organizations															
Contractor or Government		Method/Type or Funding Vehicle		Award or Obligation Date		Performing Activity		Project Office		Total Prior to					
Activity								EAC		FY 1996		FY 1997			
Product Development Organizations										FY 1996		FY 1997		FY 1998	
Northrop		SS/CPAF/		5 Jun 91						545192		86665			
Grumman Corp		CPFF/CPIF/										49509			
		FPIF										37655			
SBIR/STTR										1599		120			
In-House Support		PO		OCT						57563		6418			
Support and Management Organizations										6460		4599		315	
SETA & Program		SS/CPFF		NOV						53057		1934			
Mgmt Spt										2594		1165			
Misc. OGA		PO		OCT						42930		1841			
Test and Evaluation Organizations										1762		1058		000	
Range Support		PO		OCT						15881		2458			
Other Test		PO		OCT						12853		1845			
Government Furnished Property: Not applicable.														1908	
Subtotal Product Development										602755		93083			
Subtotal Support and Management										95987		3775			
Subtotal Test and Evaluation										28734		4581			
Total Project										727476		101439			
										67186		435			
										42254		2223			
										1600		2113			
										2548		4075			
										46077		4075			
Project D641										Exhibit R-3 (PE 0604768A)					

Page 4 of 19 Pages

884

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997		
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT	
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition										D687	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D687 BAT P3I		35214	18819	64556	70774	77488	61948	10727	5172	0	359652		

A. Mission Description and Budget Item Justification: Project D687-BAT P3I: The BAT P3I submunition maintains the BAT length, diameter, and weight configurations. The BAT P3I is a multi-sensored, terminally guided submunition that searches for, tracks, and destroys specific targets including mobile armored combat vehicles, cold stationary armored combat vehicles, Surface-to-Surface Missile (SSM) Transporter Erector Launchers (TELS), and Heavy Multiple Rocket Launchers (MRL). BAT P3I submunitions are carried deep into enemy territory by variants of the Army Tactical Missile System (ATACMS), then dispensed over numerous high-payoff targets to selectively attack and destroy individual targets. BAT P3I is intended to increase submunition lethality and expand the target arrays to be attacked. Being a certified round, the BAT P3I submunition has a low sustainment cost. This program will incorporate new seeker, warhead, and microprocessor technologies into the current BAT configuration while maintaining the current BAT form, fit and maximum commonality of BAT components. This program includes studies/demonstrations pertaining to technology advancements, alternate carriers, target recognition, and acoustic/infrared/millimeter wave characterization of expanded target sets.

Acquisition Strategy: The BAT P3I system is a sole source Program Definition and Risk Reduction (PDRR) program with competitive seeker subcontractors.

FY 1996 Accomplishments:

- 30260 Conducted P3I PDRR program
- 3958 Hardware-in-the-Loop (long lead and design)
- 996 Test Range/Warhead Activities
- Total 35214

FY 1997 Planned Program:

- 16012 Conduct P3I PDRR program
- 723 Receipt and Assembly of Major Components of the Hardware-in-the-Loop Facility
- 915 Develop Warhead Lethality Models
- 609 Conduct Captive Flight Test (CFT)
- 100 Studies, Development and Validation of Future Improvement Programs
- 460 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 18819

Project D687

Page 5 of 19 Pages

Exhibit R-2 (PE 0604768A)

885

Item 92

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT

D687

FY 1998 Planned Program:

- | | | |
|---|-------|---|
| • | 53270 | Continue System Development and Complete P31 PDRR Program |
| • | 1226 | Continue Simulation and Testing Program |
| • | 2300 | Conduct CFTs |
| • | 4613 | Integrate and Test Seekers in the Hardware-in-the-Loop Facility |
| • | 2947 | Conduct Warhead Testing |
| • | 200 | Studies, development, and validation of future improvement programs |
| | 64556 | Total |

FY 1999 Planned Program:

- | | | |
|---|-------|---|
| • | 60144 | Begin EMD |
| • | 3301 | Conduct Integration Testing Program |
| • | 1976 | Continue Hardware-in-the-Loop Seeker Assessments |
| • | 5153 | Conduct Simulations and Algorithm Development |
| • | 200 | Studies, development, and validation of future improvement programs |
| | 70774 | Total |

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
36121	34221	64804	64137
37136	18819		
-1922			
35214	18819	64556	70774

Change Summary Explanation: FY 1999 funding increase to support restructure of BAT P31 EMD program and additional funding required to maintain LRIP schedule (+6637).

C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

D. Schedule Profile

D. Schedule Profile											
	FY 1996		FY 1997		FY 1998		FY 1999				
Captive Flight Tests (CFT)	1	2	3	4	1	2	3	4	1	2	3
Target Signature Collection	X*					X		X			
Warhead Testing				X*	X						

Project D687

Page 6 of 19 Pages

Exhibit R-2 (PE 0604768A)

886

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
DATE February 1997									
BUDGET ACTIVITY	PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development	0604768A Brilliant Anti-Armor (BAT) Submunition								
D. Schedule Profile	PROJECT D687								
	FY 1996			FY 1997			FY 1998		
	1	2	3	4	1	2	3	4	1
Hardware-in-the-Loop Testing									
Milestone II									
EMD CFT									
Design Verification Test									
*Milestone completed.									

Project D687

Page 7 of 19 Pages

Exhibit R-2 (PE 0604768A)

887

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE		February 1997		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604768A Brilliant Anti-Armor (BAT) Submunition		D687	
5 - Engineering and Manufacturing Development							
		Total		FY 1996		FY 1997	
		Prior to		FY 1996		FY 1997	
		FY 1996		FY 1996		FY 1997	
Subtotal Product Development		12250	33211	17683	58179	65641	123537
Subtotal Support and Management		1749	1306	606	3227	1329	3471
Subtotal Test and Evaluation		955	697	530	3150	3804	28327
Total Project		14954	35214	18819	64556	70774	155335

889

UNCLASSIFIED

Item 92

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT

D688

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D688 ATACMS BLK II	53535	75806	91669	44777	13233	12076	0	0	0	300851

A. Mission Description and Budget Item Justification: Project D688-Army Tactical Missiles System Block II: The Army Tactical Missile System Block II (ATACMS BLK II) will be a ground launched, solid propellant, inertially guided Global Positioning System (GPS) aided missile system with 13 BATs or P3I BATs as its payload. The mission of the ATACMS BLK II is to delay, disrupt, neutralize, or destroy armored combat vehicles and other postulated high-payoff targets. Once the BAT P3I submunition is incorporated into the ATACMS BLK II, these targets will include cold stationary armored combat vehicles, mobile armored combat vehicles, heavy multiple rocket launchers and missile transporter/launchers. ATACMS BLK II will carry and dispense BAT and BAT P3I submunitions deep in enemy territory where these submunitions will automatically track and destroy numerous high-payoff targets. GPS technology will increase accuracy in flight, mitigating target location errors. ATACMS BLK II will be launched from the M270 launcher. Further, these funds will allow for future improvement program studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements. This includes studies addressing Block II integration with other platforms.

Acquisition Strategy: The Army Tactical Missile System Block II is a sole source performance specification requirement program.

FY 1996 Accomplishments:

• 47654	EMD including initiation of Block II/BAT Integration Activities.
• 300	Initiated Range Planning and Activities to Accommodate Block II Flight Tests
• 5581	Accelerated planned activities for an early Development Flight Test
Total	53535.

FY 1997 Planned Program:

• 71360	Conduct EMD Program to include Preliminary Design Review(PDR), Critical Design Review(CDR) and Block II/BAT Integration Activities
• 400	Conduct Sled Tests (OGA)
• 570	Prepare for and begin Production Proveout Test (PPT) Flight Program (OGA)
• 1374	Begin Command and Control Software Design, Development and Test
• 250	Studies, development, and validation of future improvement programs
• 1852	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	75806

Project D688

Page 10 of 19 Pages

Exhibit R-2 (PE 0604768A)

890

Item 92

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		DATE	PROJECT
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		February 1997	D688
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition	
PE NUMBER AND TITLE			
FY 1998 Planned Program:			
• 14000	Begin Pilot Production Line and Begin IOT&E Activities		
• 69594	Continue EMD Including Submunition Integration		
• 5010	Complete Production Proveout Test (PPT) Flights /Begin Preproduction Qualification Test (PQT) Flights		
• 350	Conduct "Interim" Launcher Integration Tests		
• 2465	Continue Command and Control Software Design, Development and Test		
• 250	Studies, development, and validation of future improvement programs		
Total	91669		
FY 1999 Planned Program:			
• 36412	Continue EMD and Subsystem Qualification		
• 3189	Complete PQT and conduct DT/OT Flight Tests		
• 1075	Conduct M270A1 Integration Tests		
• 1451	Conduct C4I System Integration Tests		
• 1300	Continue Command and Control Software Design, Development and Test		
• 1100	Prepare for Ground and Flight Operational Test		
• 250	Studies, development, and validation of future improvement programs		
Total	44777		
B. Project Change Summary			
FY 1997 President's Budget		FY 1996	FY 1997
Appropriated Value		62095	77559
Adjustments to Appropriated Value		63840	75806
FY 1998 Pres Bud Request		-10305	
		53535	75806
			91669
			44777
Change Summary Explanation: FY 1996 funding adjustment due to undistributed Congressional reductions and rescissions (-3305) and reprogramming to BAT Program (Project D641) (-7000) which was a higher priority requirement. FY 1998/1999 funding adjustments to support BAT P3I integration activities with the Block II missile (+14890/+8458).			
C. Other Program Funding Summary			
Missile Procurement, Army		FY 1996	FY 1997
CA 6105 ATACMS BLK II			
		FY 1998	FY 1999
		60781	80741
		FY 2000	FY 2001
		84471	109907
		FY 2002	FY 2003
		128281	509138
		To Complete	To Cost
		973319	973319
Project D688		Exhibit R-2 (PE 0604768A)	

Page 11 of 19 Pages

891

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1997		PROJECT			
BUDGET ACTIVITY										PE NUMBER AND TITLE						PROJECT	
5 - Engineering and Manufacturing Development										0604768A Brilliant Anti-Armor (BAT) Submunition						D688	
D. <u>Schedule Profile</u>										FY 1996		FY 1997		FY 1998		FY 1999	
Static Test										1	2	3	4	1	2	3	4
Sled Test										X*							
CDR																	
PDR										X*							
PPT Flight Test													X				
PQT Flight Test														X			
DT/OT Flight Test															X		X
Award LRIP Contract																X	X
*Milestone Completed																	

Project D688

Page 12 of 19 Pages

Exhibit R-2 (PE 0604768A)

Project D688

Page 12 of 19 Pages

Exhibit R-2 (PE 0604768A)

892

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1997		PROJECT		
BUDGET ACTIVITY										PE NUMBER AND TITLE						
5 - Engineering and Manufacturing Development										0604768A Brilliant Anti-Armor (BAT) Submunition						
A. Project Cost Breakdown										FY 1996	FY 1997	FY 1998	FY 1999			
Contractor Engr Support										47112	56000	63226	24441			
Development Test & Evaluation										712	5640	13969	9109			
Program Management Spt										1678	4944	5984	4454			
Program Management Personnel										4033	7370	8490	6773			
SBIR/STTR											1852					
Total										53535	75806	91669	44777			
B. Budget Acquisition History and Planning Information																
Performing Organizations																
Contractor or Government										Project Office		Total Prior to				
Performing Activity										EAC		FY 1996		FY 1997		
Award or Obligation Date										EAC		FY 1996		FY 1997		
Performing Activity										EAC		FY 1996		FY 1997		
Product Development Organizations										EAC		FY 1996		FY 1997		
LMV SS/CPFF										EAC		FY 1996		FY 1997		
In-House Support PO										EAC		FY 1996		FY 1997		
SBIR/STTR										EAC		FY 1996		FY 1997		
Support and Management Organizations										EAC		FY 1996		FY 1997		
SETA & Program SS/CPFF										EAC		FY 1996		FY 1997		
Mgmt Spt										EAC		FY 1996		FY 1997		
Misc. OGA										EAC		FY 1996		FY 1997		
Activities										EAC		FY 1996		FY 1997		
Test and Evaluation Organizations										EAC		FY 1996		FY 1997		
Range Support PO										EAC		FY 1996		FY 1997		
Other Test PO										EAC		FY 1996		FY 1997		
Activities										EAC		FY 1996		FY 1997		
Government Furnished Property: Not applicable.										EAC		FY 1996		FY 1997		
Subtotal Product Development										EAC		FY 1996		FY 1997		
Subtotal Support and Management										EAC		FY 1996		FY 1997		
Subtotal Test and Evaluation										EAC		FY 1996		FY 1997		
Total Project										EAC		FY 1996		FY 1997		
Project D688										EAC		FY 1996		FY 1997		
Exhibit R-3 (PE 0604768A)										EAC		FY 1996		FY 1997		

Page 13 of 19 Pages

Exhibit R-3 (PE 0604768A)

893

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D686

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D686 ATACMS BLK IIA	0	0	0	11094	47983	52836	54926	17115	0	183954

A. Mission Description and Budget Item Justification: Project D686-Army TACMS Block IIA: The Army TACMS Block IIA (ATACMS Block IIA) will be a ground launched, solid propellant, inertially guided Global Positioning System(GPS) aided missile system with six BAT P31 submunitions as its payload. The ATACMS Block IIA will be launched from the M270 launcher in response to the same Command and Control (C2) nodes applicable to the Block I, Block IA, and Block II missiles. Since the Block IIA payload only houses six submunitions rather than 13, as in the Block II, it is capable of achieving extended ranges comparable to the Block IA. The mission of the ATACMS Block IIA will be to delay, disrupt, or destroy the Block II target sets plus cold stationary tanks and armored combat vehicles as well as moving and stationary surface-to-surface missile (SSM) transporter erector launchers (TELs) at extended ranges. The Block IIA missile will dispense 6 BAT P31 submunitions at ranges beyond the Block II system.

Acquisition Strategy: The Army Tactical Missile System Block IIA is a sole source performance specification requirement program.

FY 1996 Accomplishments: Project not funded in FY 1996

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 300 Department of the Army In-Process Review (DA IPR)
- 8937 Initiate and Conduct EMD Program; Conduct Submunition Integration Activities
- 1857 Conduct Test Range and Target Operation, Maintenance and Improvement
- Total 11094

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996

FY 1997

FY 1998

FY 1999

11133

35990

0

11094

Change Summary Explanation: FY 1998/1999 funding adjustments to support Block IIA delay of one year to pay for higher Army priorities (-11133/-24896).

Project D686

Page 14 of 19 Pages

Exhibit R-2 (PE 0604768A)

894

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D686

C. Other Program Funding SummaryMissile Procurement, Army
CA 6110 ATACMS BLK IIA

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
							9868	62542	459320	531730

D. Schedule ProfileDA IPR
EMD Contract

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	4	1	2	3	4	1	2
									X
									X

Project D686

Page 15 of 19 Pages

Exhibit R-2 (PE 0604768A)

895

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D2NT

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2NT BAT Operational Test	284	5	0	273	3854	0	0	0	0	4416

A. Mission Description and Budget Item Justification: Project D2NT-OPTEC: Project D2NT finances the direct costs of planning and conducting operational testing and evaluation of the BAT submunition by the Operational Test and Evaluation Command (OPTEC). The BAT submunition is an Acquisition Category (ACAT) I system with a dedicated Initial Operational Test and Evaluation in FY 1998 in support of a Low Rate Initial Production (LRIP) decision. Operational testing is conducted under conditions, as similar as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides the Army leadership with an independent test and evaluation of both the effectiveness and suitability of the system.

Acquisition Strategy: Not applicable.

FY 1996 Accomplishments:

- 284 IOTE planning and preparation
- Total 284

FY 1997 Planned Program:

- 5 IOTE planning and preparation
- Total 5

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 273 IOTE planning and preparation
- Total 273

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
291	5	223	1079
299	5		
-15			
284	5	0	273

Change Summary Explanation: FY 1998/1999 funding adjustments to support ATACMS Block II/BAT IOTE schedule (-223/-806).

Project D2NT

Page 17 of 19 Pages

Exhibit R-2 (PE 0604768A)

897

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997																																																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																																					
5 - Engineering and Manufacturing Development	0604768A Brilliant Anti-Armor (BAT) Submunition	D2NT																																																																					
<p>C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.</p>																																																																							
<p>D. Schedule Profile</p> <table border="1"> <thead> <tr> <th></th> <th colspan="4">FY 1996</th> <th colspan="4">FY 1997</th> <th colspan="4">FY 1998</th> <th colspan="4">FY 1999</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Conduct IOTE Activities</td> <td>X*</td> <td>X*</td> <td>X*</td> <td>X*</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> </tr> </tbody> </table>					FY 1996				FY 1997				FY 1998				FY 1999					1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	Conduct IOTE Activities	X*	X*	X*	X*	1	2	3	4	1	2	3	4	1	2	3	4						X*								X	X		
	FY 1996				FY 1997				FY 1998				FY 1999																																																										
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4																																																							
Conduct IOTE Activities	X*	X*	X*	X*	1	2	3	4	1	2	3	4	1	2	3	4																																																							
					X*								X	X																																																									
<p>*Milestone completed</p>																																																																							

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE	February 1997	PROJECT
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition						D2NT
A. Project Cost Breakdown								
Operational Test and Evaluation		FY 1996	FY 1997	FY 1998	FY 1999			
Total		284	5	0	273			
		284	5	0	273			
B. Budget Acquisition History and Planning Information								
Performing Organizations								
Contractor or Government Performing Activity	Contract							
	Method/Type or Funding Vehicle							
Award or Obligation Date	Performing Activity							
	EAC							
Product Development Organizations: None								
Support and Management Organizations: None								
Test and Evaluation Organizations								
Other Test Activities								
		284	5	0	273			4416
Government Furnished Property: Not applicable.								
Subtotal Product Development								
Subtotal Support and Management								
Subtotal Test and Evaluation		284	5	0	273			4416
Total Project		284	5	0	273			4416

Project D2NT

Page 19 of 19 Pages

Exhibit R-3 (PE 0604768A)

899

Item 92

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604770A Joint Surveillance/Target Attack Radar System

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	15302	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing
D202 Army Joint STARS (TIARA)	13613	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing
D2CT JSTARS Operational Test (TIARA)	1689	0	0	0	0	0	0	0	0	5040

Mission Description and Budget Item Justification: This is a Tactical Intelligence and Related Activities (TIARA) program. US Forces have an urgent need for a wide-area surveillance and target attack radar system capable of continuous coverage out to a depth in excess of 100km beyond their Forward Line of Troops. Commanders must have the capability to detect, locate, classify and track moving and stationary targets for situation assessment to avoid surprise and attack targets out to the range of existing and developing weapons. The Joint Surveillance and Target Attack Radar System (JSTARS) provides battle management and targeting of enemy units at critical times and places so commanders can employ their organic forces and firepower in support of deep, close and rear operations. The joint Army/Air Force program objective is to develop a radar, datalink, ground station, and airframe that will provide the capability to locate, track and classify tracked and wheeled vehicles beyond ground line-of-sight during the day, night and under most weather conditions. Radar data is distributed to ground station modules via a secure surveillance and control data link. The Army developed the ground components of the JSTARS under this PE, project D202. In remaining years, the Army will continue to develop, and validate performance enhancing Pre-Planned Product Improvements (P3I). Also included in this PE is project D2CT with FY 96 funding for the Multi-Service Operational Test and Evaluation (MOTE). The projects in this program element support development efforts in the Engineering and Manufacturing Development phases of the Acquisition Strategy and therefore are correctly placed in Budget Activity 5.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

D202

System

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D202 Army Joint STARS (TIARA)	13613	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing

A. Mission Description and Justification: The Army will develop the ground components of the JSTARS under this PE/Project. The Ground Station Module (GSM) is being developed in a Block approach. Block I Ground Station Modules (GSM) utilize the same prime mission equipment and will be developed and deployed on different platforms. The Block I Medium GSM (MGSM) is housed in a standard S280 shelter and mounted on a 5 Ton Truck. The rapidly deployable Block I Light GSM (LGSM) is housed in a Standard Integrated Command Post Shelter (SICPS) and mounted on a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). A Block I Heavy GSM (HGSM) prototype was also assembled. This variant integrated the GSM prime mission equipment into a Command and Control Vehicle (C2V) (a Bradley variant). Also included in this project is the development of the Block II GSM now called the Common Ground Station (CGS). The CGS will integrate signal, imagery, and other intelligence processing into a single ground station, resulting in enhanced battle management as well as significant cost savings. These enhancements are being implemented in a phased approach of Pre-Planned Product Improvements (P3I) initiatives and provide significant expansion of the system performance parameters. Significant enhancements include: integration of Secondary Imagery Dissemination, extended range (SATCOM relay) capability, full on the move and manportable operations as well as integration/interface with other service/allied sensor systems.

Acquisition Strategy: In December 1995, the JSTARS Ground Station Program awarded an eight year [basic plus seven one year options] production contract to acquire the balance of ground stations required to meet Army needs. The first two years of the contract are Low Rate Initial Production (LRIP) with the first deliveries participating in a September 1997 Operational Test. This test will support the Milestone III decision scheduled for May 1998. The contract also includes provisions for the design, development and test of various P3Is. Following P3I prove out, the modifications are folded into the production contract via fixed price contract revisions.

FY 1996 Accomplishments:

- 1834 Completed LGSM EMD Program
- 10559 Initiated Phase I CGS Design/System Enhancements
- 1220 Conducted CGS Phase I Critical Design Review (CDR)
- Total 13613

FY 1997 Planned Program:

- 5710 Complete Secondary Imagery Dissemination Integration
- 2106 Initiate Sensor Integration (P3I)
- 1590 IOT&E Support
- 218 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 9624

Project D202

Page 2 of 9 Pages

Exhibit R-2 (PE 0604770A)

901

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

PROJECT

D202

System

FY 1998 Planned Program:

- 2904 Continue Additional Sensor Integration (P3I)
- 1771 Trainer/Training Enhancements
- 2265 IOT&E Support
- Total 6940

FY 1999 Planned Program:

- 2814 Complete CGS Expanded Capability Development
- 2200 Provide Additional Simulators/Embedded Training Capability
- 656 Test CGS Expanded Performance Capabilities
- Total 5670

B. Project Change Summary

FY 1997 Presidents Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
25747	9857	7202	6068
26007	9624		
-12394			
13613	9624	6940	5670

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
BA1080 Joint STARS (TIARA)	82376	85321	118873	89180	91196	102224	36146	18039	Cont	Cont
BS9724 Joint STARS Spares	3569	8770	6346	6487	6600	6687	7439	4747	Cont	Cont
NATO AGS C35	9500	0	13500	15105					Cont	
NATO AGS BA 1082	0	0	26153	32575						

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
CGS LRIP Award	1	2	1	4
Conduct CGS PDR	X*	2	2	3
Complete LGSM EMD Program				
Conduct CGS Phase I CDR				
Start CGS Technical Test				

X*

Project D202

Page 3 of 9 Pages

Exhibit R-2 (PE 0604770A)

902

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

D202

System

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
First CGS LRIP Delivery						X										
Initial CGS Operator Training																
Conduct Final CGS Technical Test								X								
Complete CGS Operational Test								X								
Prepare CGS Operator Test Report										X						
Milestone III										X						
Develop Advanced Imagery Capability													X			
Complete Advanced P3I Technical Test														X		
Complete Advanced P3I Operational Assessment															X	

*Milestone Completed

Project D202

Page 4 of 9 Pages

Exhibit R-2 (PE 0604770A)

903

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

PROJECT

D202

System

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total					Total Program
				Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	
Government Furnished Property									
Contract									
Product Development Property	Reqn			600	92	140	105	105	Cont
Support and Management Property: N/A									
Test and Evaluation Property: N/A									
Subtotal Product Development									
Subtotal Support and Management				132137	10905	7133	4084	4592	Cont
Subtotal Test and Evaluation					2058	901	591	553	Cont
Total Project				132137	650	1590	2265	525	Cont
					13613	9624	6940	5670	Cont

Project D202

Page 6 of 9 Pages

Exhibit R-3 (PE 0604770A)

905

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604770A Joint Surveillance/Target Attack Radar System

PROJECT

D2CT

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2CT JSTARS Operational Test (TIARA)	1689	0	0	0	0	0	0	0	0	5040

A. Mission Description and Justification: Project D2CT provides for the Army's costs associated with the Multi-Service Operational Test and Evaluation (MOTÉ). All MOTÉ activities were completed by 2Q96. This Joint Service Initial Operational Test and Evaluation (IOT&E) supports both the US Army and US Air Force for the Joint STARS Full Scale Production Decisions. (US Air Force in FY 96 and US Army in FY 98)

FY 1996 Accomplishments:

- 789 Conducted MOTÉ
- 900 Completed Test Analysis and Reports
- Total 1689

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
1733	0	0	0
1750	0	0	0
-61	0	0	0
1689			

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
BA1080 Joint STARS Army TIARA Funding	80376	85428	118873	90134	92274	103439	36514	18154	Cont	Cont
BS9724	3569	8770	6346	6487	6600	6687	7439	4747	Cont	Cont

Project D2CT

Page 7 of 9 Pages

Exhibit R-2 (PE 0604770A)

906

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604770A Joint Surveillance/Target Attack Radar				February 1997		D2CT	
		System							
D. <u>Schedule Profile</u>		FY 1996		FY 1997		FY 1998		FY 1999	
1		2	3	4	1	2	3	4	1
MOTE Pre Test Planning and Training									
MOTE		X*							
Prepare MOTE Report									
*Denotes completed milestone									

Project D2CT

Page 8 of 9 Pages

Exhibit R-2 (PE 0604770A)

907

Item 93

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604770A Joint Surveillance/Target Attack Radar

D2CT

A. Project Cost Breakdown									
Operational Test and Evaluation									
Total									
FY 1996	FY 1997	FY 1998	FY 1999						
1689	0	0	0						
1689	0	0	0						
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC					
Product Development Organizations: N/A									
Support and Management Organizations: N/A									
Test and Evaluation Organizations									
OPTEC	MIPR	Dec 94			3307	1689	0	0	4996
Government Furnished Property: Not applicable									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
					3307	1689			4996
					3307	1689			4996

Exhibit R-3 (PE 0604770A)

Item 93

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604778A Positioning Systems Development

D168

(SPACE)

	COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D168 NAVSTAR Global Positioning System (GPS) Equipment		436	428	419	409	458	453	0	0	0	2603

A. Mission Description and Budget Item Justification: Project D168 provides for Army participation in the research and development phases of Army weapon systems requiring positioning/navigation capabilities. It provides for the engineering development of several alternatives for integration of GPS receivers into selected systems. These alternatives include, but are not limited to, Embedded/Integrated GPS, Advanced GPS Receivers (AGR), Tactical GPS Anti-Jam Technology (TGAT) and Differential GPS. The project in this program element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Acquisition Strategy: Perform studies and analyses of host vehicles to support development of alternative GPS applications.

FY 1996 Accomplishments:

- 163 Procured and tested items in the marketplace to remain current with NDI alternatives (to include embedding)
- 161 Advanced GPS receiver framework conceptualization (non-hardware work) to meet evolving user requirements.
- 112 Air receiver exploration for MAGR follow-on replacement

Total 436

FY 1997 Planned Program:

- 111 Improve accuracy and time to fix studies for follow-on equipment requirements
- 150 Test program for NDI aviation GPS receiver (MAGR follow-on/replacement)
- 156 Improve survivability of GPS capability (renewed anti-jam/anti-spoof and other threats response)
- 11 Small Business Innovation Research/Small Business Technology Transfer (STTR)

Total 428

FY 1998 Planned Program:

- 120 Continue improving accuracy and time to fix studies
- 134 Continue survivability studies
- 165 Explore emerging capabilities based on follow-on satellite configuration options

Total 419

Project D168

Page 1 of 3 Pages

Exhibit R-2 (PE 0604778A)

909

Item 94

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997																									
BUDGET ACTIVITY		PROJECT																										
5 - Engineering and Manufacturing Development		D168																										
PE NUMBER AND TITLE		0604778A Positioning Systems Development (SPACE)																										
<p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 200 Continue exploration of emerging capabilities • 109 Support miniaturization studies • 100 Conduct studies on interfacing GPS with other systems <p>Total 409</p>																												
<p>B. Project Change Summary</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1996</th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1997 President's Budget</td> <td>448</td> <td>437</td> <td>436</td> <td>424</td> </tr> <tr> <td>Appropriated Value</td> <td>452</td> <td>428</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-16</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1998 Pres Bud Request</td> <td>436</td> <td>428</td> <td>419</td> <td>409</td> </tr> </tbody> </table>					FY 1996	FY 1997	FY 1998	FY 1999	FY 1997 President's Budget	448	437	436	424	Appropriated Value	452	428			Adjustments to Appropriated Value	-16				FY 1998 Pres Bud Request	436	428	419	409
	FY 1996	FY 1997	FY 1998	FY 1999																								
FY 1997 President's Budget	448	437	436	424																								
Appropriated Value	452	428																										
Adjustments to Appropriated Value	-16																											
FY 1998 Pres Bud Request	436	428	419	409																								
<p>C. Other Program Funding Summary</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1996</th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>K47800, Other Procurement, Army, NAVSTAR GPS</td> <td>49040</td> <td>26255</td> <td>6796</td> <td>7018</td> <td>6895</td> <td>33332</td> <td>33967</td> <td>51991</td> <td>40000</td> <td>255295</td> </tr> </tbody> </table>					FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	K47800, Other Procurement, Army, NAVSTAR GPS	49040	26255	6796	7018	6895	33332	33967	51991	40000	255295			
	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total																		
K47800, Other Procurement, Army, NAVSTAR GPS	49040	26255	6796	7018	6895	33332	33967	51991	40000	255295																		
<p>D. Schedule Profile: Not applicable</p>																												

Project D168

Page 2 of 3 Pages

Exhibit R-2 (PE 0604778A)

910

Item 94

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997	PROJECT	
BUDGET ACTIVITY	PE NUMBER AND TITLE (SPACE)	FY 1996	FY 1997	FY 1998	FY 1999
5 - Engineering and Manufacturing Development					
A. Project Cost Breakdown					
Developmental Test and Evaluation		0	150	134	109
Government Engineering Support		273	156	165	200
Contractor Engineering Support		163	111	120	100
SBIR/STTR			11		
Total		436	428	419	409
B. Budget Acquisition History and Planning Information: Not applicable					

Project D168

Page 3 of 3 Pages

Exhibit R-3 (PE 0604778A)

Item 94

911

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT)

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	56282	26110	2823	2866	7205	3054	18599	29641	0	288427
D571 Close Combat Tactical Trainer	56282	26110	2823	2866	7205	3054	0	0	0	240187
D582 Engineer CATT	0	0	0	0	0	0	18599	29641	0	48240

Mission Description and Budget Item Justification: The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The specific systems that comprise CATT include Close Combat Tactical Trainer (CCTT), Aviation Combined Arms Tactical Trainer (AVCATT), Engineer Combined Arms Tactical Trainer (ENCATT), Fire Support Combined Arms Tactical Trainer (FSCATT) and Air Defense Combined Arms Tactical Trainer (ADCATT). CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). By practicing skills in CATT, units are able to make more effective use of scarce and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. Units taking their CATT systems with them on operational deployments, such as peacekeeping missions, are able to sustain essential warfighting skills when not at their home station. By being able to process a wide array of terrain data bases and modify the behavior of the computer generated opposing forces, CATT offers a virtually unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training and realistic simulation training in CATT is the catalyst to prepare soldiers and their leaders for the uncertainties they will face in an unpredictable world. The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604780A Combined Arms Tactical Trainer (CATT)

PROJECT
D571

5 - Engineering and Manufacturing Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D571 Close Combat Tactical Trainer	56282	26110	2823	2866	7205	3054	0	0	0	240187

A. Mission Description and Justification: Project D571 - Close Combat Tactical Trainer: Provides for engineering and manufacturing development (EMD) and pre-planned product improvements for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program will develop a networked system of interactive computers, emulators and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated real-time collective task training environment. This trainer will allow soldiers to practice, repetitively, techniques which, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow soldiers and units to learn tactical combat lessons on maneuver, command and control, and improved teamwork for increased survivability.

Acquisition Strategy: Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications.

FY 1996 Accomplishments:

- 47655 Completed spiral build 7. Produced and delivered a fixed company team site (38 modules) and 2 mobile platoon sets (11 modules); performed software/hardware physical configuration audit; conducted Preproduction Qualification Test (PPQT) for both fixed and mobile systems and prepared for fixed and mobile Initial Operational Test and Evaluation (IOT&E).
- 6317 Maintained support services to the program office.
- 2310 Provided government program management, engineering, technical and contract support.
- Total 56282

FY 1997 Planned Program:

- 20750 Complete deliveries, complete semi-automated forces improvements, conduct and support development testing and IOT&E, correct deficiencies from testing, complete documentation and audit trail, and prepare for pre-planned product improvements.
- 2612 Maintain support services to the program office.
- 2110 Provide government program management, engineering, technical and contract support.
- 638 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 26110

FY 1998 Planned Program:

- 2823 Execute Engineering Change Proposals (ECPs) and minor software changes based on user experience and operational testing.
- Total 2823

Project D571

Page 2 of 5 Pages

Exhibit R-2 (PE 0604780A)

913

Item 95

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT) D571

FY 1999 Planned Program:

- 2866 Continue ECPs and minor software changes based on user experience and operational testing.

Total

B. Project Change Summary

FY 1997 President's Budget Request

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud

FY 1996
57742
59475
-3193
56282FY 1997
26713
26110
0
26110FY 1998
3033FY 1999
3095

2823

2866

Change Summary Explanation: FY 96 project funds decremented (-1460) for undistributed Congressional reductions and rescissions.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation	29259	78342	92968	116141	34106	33546	0	0	0	423242
NA0170 SIMNET/CCTT										
Military Construction, A Appropriation	10500	11900	13300	7300	0	0			0	50500
Operation and Maintenance, A Appropriation	394	4801	6303	10929	10661	10190	10411	10636	Cont'd	Cont'd

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	4	1	2	3	4	1	2
	X*								
	X*								

Spiral Build 7

Quick Start Decision

PPQT Fixed System/Formal Qualification

Test

IOT&E Fixed System

PPQT/IOT&E Mobile System

* Completed Milestones

Project D571

Page 3 of 5 Pages

Exhibit R-2 (PE 0604780A)

914

Item 95

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT)

D571

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	
Contractor Development	34617	17004	0	0	
Contractor Program Management/System Engineering	13038	3746	0	0	
Program Office/Technical Support	2300	2110	250	250	
Government Agency Support	3590	1039	216	106	
Support Contracts	2737	1573	0	0	
Engineering Changes/Software Changes	0	0	2357	2510	
SBIR/STTR		638			
Total	56282	26110	2823	2866	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Loral FSC	C-CPAF/ T&M/FFP	Nov 92	195831	195831	112776	47655	20750	2357	2510	9783	195831

Product Development Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
NAWC-TSD	MIPR	Dec 92	12532	12532	7146	2300	2110	250	250	476	12532

Support and Management Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
RCI	T&M	Feb 93	3687	3687	3687	0	0	0	0	0	3687
CECOM	MIPR	Nov 93	7655	7655	3350	2490	1812	0	0	0	7652
MICOM	MIPR	Jan 94	1020	1020	1020	0	0	0	0	0	1020
Sherikon	T&M	Oct 94	4400	4400	1800	1800	800	0	0	0	4400
Miscellaneous	Various	Various	15065	15065	12068	2037	638	216	106	0	14427
SBIR/STTR											638

Test and Evaluation Organizations: None

Government Furnished Property: None

Project D571

Page 4 of 5 Pages

Exhibit R-3 (PE 0604780A)

915

Item 95

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT)

PROJECT

D571

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	112776	47655	20750	2357	2510	9783	195831
Subtotal Support and Management	29071	8627	5360	466	356	476	44356
Subtotal Test and Evaluation							
Total Project	141847	56282	26110	2823	2866	10259	240187

Project D571

Page 5 of 5 Pages

Exhibit R-3 (PE 0604780A)

916

Item 95

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604801A Aviation - Engineering Development								DC45	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC45	Aircrew Integrated Systems (ACIS)	4885	5403	5109	6067	2076	2065	2172	2181	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC45 Aircrew Integrated Systems (ACIS) formerly Aviation Life Support Equipment (ALSE) - Engineering Manufacturing Development (EMD). This project provides engineering and manufacturing development for those systems and items of equipment which are unique and necessary for the sustainment and enhanced survivability of Army aircrews and passengers on the future integrated battlefield and during related training activities. EMD programs will focus on air vehicle integration, airworthiness qualification and user evaluation of multiple technologies to improve aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. These programs include: advanced technology laser protection against emerging new threat systems; product improvements to existing helmets to improve performance and increase commonality; development and adaptation of airbag technology to Army aircraft to improve crash protection and enhance aircrew survivability; and follow-on air vehicle integration and test of Air Warrior program effort to enhance and maximize aircrew performance in force modernized aircraft. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. Both joint and service independent efforts will be pursued under the scope of this project. The project in this Program Element supports research efforts in the EMD phase of the Acquisition Strategy and is correctly placed in Budget Activity 5.

Acquisition Strategy: DC45 - The Cockpit Air Bag Systems (CABS) B-kit components will be competitively procured using an approved performance specification and interface drawings (except that the initial production quantity will be procured sole-source from the developer.) The CABS A-kit hardware will be aircraft specific and will be procured competitively. CABS will be installed via field retrofit and production line incorporation (where applicable.) Pre-Planned Product Improvement (P3I) of the helmet is awarded, as required, to the helmet developer, Gentex Corp. Performance specifications for the joint service advanced laser eye protection program are being developed and will be used for production competition. A maximum of two competitive contractor teams will develop a functional analysis and breadboard mock-up of the Air Warrior ensemble during a Program Definition and Risk Reduction phase. Then, one team will be selected to develop the Air Warrior ensemble during a combined Program Definition and Risk Reduction (PDRR) and EMD phase.

FY 1996 Accomplishments:

- 970 Continued CABS EMD for AH-64 Apache and adapted CABS components for common application to other aircraft platforms,
- 2932 Initiated transition from Joint CABS Program Definition Risk Reduction (PDRR) to UH-60 CABS EMD program (including in-house effort)
- 718 Continued AIHS (Aircrew Integrated Helmet System) P3I efforts in EMD
- 265 Initiated EMD for Advanced Laser Eye Protection (LEP) effort (Joint Service)
- 4885

Total

Project DC45

Page 1 of 6 Pages

Exhibit R-2 (PE 0604801A)

917

Item 96

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604801A Aviation - Engineering Development

PROJECT

DC45

FY 1997 Planned Program:

- | | | |
|---|------|--|
| • | 3714 | Continue EMD for UH-60 CABS |
| • | 898 | Continue AIHS P ³ I efforts in EMD |
| • | 670 | Complete EMD for the Advanced LEP (Joint Service) |
| • | 121 | Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs |
| | 5403 | |
| | | Total |

FY 1998 Planned Program:

- 5109 Initiate Air Warrior EMD with combined PDRR effort
- 5109 Total

FY 1999 Planned Program:

- | | | |
|-------|------|--|
| • | 6067 | Continue Air Warrior EMD with combined PDRR effort |
| Total | 6067 | |

B. Project Change Summary

Previous President's Budget	5002	5518	7596	6910
Appropriated Value	5142	5403		
Adjustments to Appropriated Value	-257			
Current Budget Submit/President's Budget	4885	5403	5109	6067

Change Summary Explanation: Funding: FY98 reduction due to execution difficulties (-1700)
FY98/99 also reduced for efficiencies (FY98 -787/FY99 -843).

C. Other Program Funding Summary

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
RRDTE, A BA 4 PE 0603801A Project DB45, ACIS - AD	9401	8913	2545	2460	0	0	2801	2817	Cont	
Aircraft Procurement Army (APA) (ACIS) SSN AZ3110	7142	13280	12472	10003	8982	8920	23856	36827	Cont	

Project DC45

Page 2 of 6 Pages

Exhibit R-2 (PE 0604801A)

918

Item 96

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604801A Aviation - Engineering Development

DC45

D. Schedule Profile**AH-64 CABS**

Preliminary Design Review

Devel Verification Testing

UH-60 CABS

Contract Award

Critical Design Review

Qualification Testing

Development Test (DT)

LRIP Decision

AIHS P³I

Continue Head Tracker EMD

Conduct Demo on Static AH-64

Develop Breadboard Prototype

Continue Breadboard Prototype Dev

Airworthiness Test of Prototype

Flight Test Breadboard on AH-64

Advanced Laser Eye Protection (LEP)

Initiate EMD Phase

Conceptual Design Review

Preliminary Design Review

Initiate Design Verification Testing

Air Warrior

Begin combined advanced

development/EMD design testing

Air Warrior Preliminary Design Review

Air Warrior Critical Design Review

Air Warrior prototype development

initiated

Air Warrior production component

requirements evaluated

Air Warrior prototype testing initiated

Project DC45

Page 3 of 6 Pages

Exhibit R-2 (PE 0604801A)

919

Item 96

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
5 - Engineering and Manufacturing Development		0604801A Aviation - Engineering Development								DC45			
D. Schedule Profile		FY 1996		FY 1997		FY 1998		FY 1999					
		1	2	3	4	1	2	3	4	1	2	3	4
Continue Air Warrior EMD/prototype development													
*Denotes milestone completed													X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1997

BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT	
5 - Engineering and Manufacturing Development		0604801A Aviation - Engineering Development				DC45	
A. <u>Project Cost Breakdown</u>							
Product Development Organizations		FY 1996	FY 1997	FY 1998	FY 1999		
		2536	3448	3746	4558		
Support and Management Organizations		2109	1341	903	841		
Test and Evaluation Organizations		240	493	460	668		
SBIR/STTR		0	121	0	0		
Total Project		4885	5403	5109	6067		
B. <u>Budget Acquisition History and Planning Information</u>							
Performing Organizations							
Contractor or	Contract	Project		Total		Budget to	Total
Government	Method/Type	Office	Prior to			Complete	Program
Performing	Award or	EAC	FY 1996	FY 1997	FY 1998	FY 1999	
Activity	Obligation						
	Date						
	Vehicle						
Product Development Organizations							
AH-64 CABS	SS-CPFF	May 1994	2128	1550	578		
Simula - Phoenix, AZ							
UH-60 CABS	SS-CPFF	May 1996	3994	1734	2260		
Simula - Phoenix, AZ							
AIHS P ³ I	SS-CPFF	Dec 1997	873	873	873		
Gentex - Carbondale, PA							
Advanced LEP	SS-CPFF	Jan 1997	315	315	315		
AOTEC - South Bridge, MA							
Air Warrior	C-CPFF	Jan 1998					
Contractor TBD							
Miscellaneous	SS/C-CPFF	thru FY 1996					
				9735	224	3746	4558
						Cont	Cont

Exhibit R-3 (PE 0604801A)

Page 5 of 6 Pages

Item 96

921

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604801A Aviation - Engineering Development

PROJECT

DC45

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Perform Activity EAC	Project Office EAC	Total Prior to FY 1996	Fiscal Year				Budget to Complete	Total Program
						FY 1996	FY 1997	FY 1998	FY 1999		
Support and Management Organizations											
Various Organizations	MIPR	Various			6474	2109	1341	903	841	Cont	Cont
Test and Evaluation Organizations											
Government Agencies	MIPR				2989	240	493	460	668	Cont	Cont
Subtotal Product Development											
					11285	2536	3569	3746	4558	Cont	Cont
Subtotal Support and Management											
					6474	2109	1341	903	841	Cont	Cont
Subtotal Test and Evaluation											
					2989	240	493	460	668	Cont	Cont
Total Project											
					20748	4885	5403	5109	6067	Cont	Cont

Project DC45

Page 6 of 6 Pages

Exhibit R-3 (PE 0604801A)

922

Item 96

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	14845	23661	3577	24865	49143	45398	6979	11404	Continuing	Continuing
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	0	0	0	1777	1765	3744	4632	Continuing	Continuing
D284 Multipurpose Individual Munition	8172	13813	2922	18964	23212	11147	0	0	0	78230
D531 105mm Howitzer Ammunition Improvement	3432	5067	0	0	0	0	0	0	0	19838
D613 Mortar Systems	2768	0	0	0	10966	13225	0	0	0	46942
D695 XM982	0	0	655	5901	10729	16169	0	0	0	33454
D712 Non-Lethal Programs	0	3215	0	0	0	0	0	0	0	3215
DAS1 Small Arms Improvement	473	1566	0	0	2459	3092	3235	6772	Continuing	Continuing

Mission Description and Budget Item Justification: Provides for engineering development of weapons and munitions systems. The Multi-Purpose Individual Munition (MPIM) provides the infantry with a fire-and-forget weapon capable of defeating enemy forces in buildings, bunkers and lightly armored vehicles. The howitzer ammunition effort supports development of ammunition for the M119A1 Howitzer. The mortar systems effort supports qualification of an Improved Mortar Ballistic Computer (IMBC) and type classification of training and illumination cartridges for the 120mm mortar. The XM982 extended range Dual Purpose Improved Conventional Munition (DPICM) combines base burn and rocket assisted technologies in an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the Light Weight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. The non-lethal program provides for force response options for non-lethal immobilization of personnel and materiel through development of non-lethal capabilities for multiple weapon systems/platforms. The small arms improvement program develops technology to enhance lethality, target acquisition, fire control, training effectiveness and /or reliability for small arms weapon systems. This project develops a universal mounting bracket for the MK19-3 Grenade Machine Gun. Projects within this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D284	
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D284	Multipurpose Individual Munition	8172	13813	2922	18964	23212	11147	0	0	0	78230
<p>A. Mission Description and Justification: Provides for an Engineering Manufacturing Development (EMD) of a lightweight, shoulder fired, multiple purpose weapon. Provides the infantry with a fire and forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The Multiple Purpose Individual Munition/Short Range Anti-Tank Weapon (MPIM/SRAW) is capable of being fired quickly from its carrying configuration and can be safely fired from an enclosure for the close battle. It will replace the current AT4 system which was designed to defeat only light armor. This system will have tremendously increased lethality over the AT4 and will be multiple target capable. System design will allow for growth, service life extension and technology insertion to support the U. S. Army mission of crisis response to regionally based threats. The Army and U. S. Marine Corps have signed a memorandum of agreement for a horizontal technology integration effort utilizing the USMC SRAW flight module/launcher as the carrier for the MPIM warhead.</p> <p>Acquisition Strategy: The MPIM/SRAW is a 65-month two phase EMD program which will leverage off the USMC 42-month SRAW EMD contract awarded in June 1994 and the 18-month U. S. Army technology demonstration MPIM/SRAW contract awarded in January 1995. The MPIM/SRAW EMD Phase 1 contract (18 month risk mitigation effort) was awarded in October 1996 with an EMD Phase 2 (maturation) contract (option) award in April 1998. Funding for initial production facilitization (IPF) and long lead items (LLI) procurement begins in FY 01 to facilitate maintaining an FY 02 First Unit Equipped (FUE). Low rate initial production (LRIP) will begin in FY 02. Full rate production begins in FY 04.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 1132 Preparation for Milestone II Decision 1003 Preparation of Model EMD contract (Alpha Acquisition) 2500 Awarded Phase I of EMD contract 610 Initiated warhead module design improvements 2057 Procured EMD Phase 1 missile hardware to support flight tests 270 Conducted survey missile test 340 Conducted wind tunnel test 260 Initiated simulation validation verification and analysis (VV&A) Total 8172 											

Project D284

Page 2 of 24 Pages

Exhibit R-2 (PE 0604802A)

924

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D284

Development

FY 1997 Planned Program:

• 1868	Continue Phase 1 EMD effort
• 750	Complete warhead module design improvements
• 3700	Initiate Phase 2 EMD contract
• 700	Complete simulation VV&A
• 1750	Conduct Phase 1 EMD flight tests and analysis
• 3000	Initiate procurement of missile hardware for pre-production test (PPT) flight tests
• 850	Initiate integrated logistics support (ILS), quality and environmental programs to support EMD
• 858	Finalize system level specification for preliminary design review (PDR)
• 337	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	13813

FY 1998 Planned Program:

• 1216	Conduct system level analysis
• 700	Initiate procurement of range support hardware for PPT flights
• 606	Support PDR
• 400	Prepare and conduct early user demonstration (EUD)
Total	2922

FY 1999 Planned Program:

• 2806	Continue Phase 2 EMD effort
• 1722	Complete procurement of missile hardware for PPT flight tests
• 2700	Conduct PPT flight tests
• 620	Complete procurement of range support hardware for PPT flight tests
• 2320	Conduct grenade safe and arm (S&A) trade studies, analysis and tests
• 1520	Design and fabricate missiles for electromagnetic environmental effects (E3) analyses and tests
• 1720	Continue ILS, quality and environmental programs to support EMD
• 870	Prepare for critical design review (CDR)
• 4366	Initiate procurement of missile hardware for pre-production qualification testing (PPQT)
• 320	Conduct lethality analysis
Total	18964

Project D284

Page 3 of 24 Pages

Exhibit R-2 (PE 0604802A)

925

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development						February 1997	D284
B. Project Change Summary		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
FY 1997 President's Budget		11973	14108	9353	17346				
Appropriated Value		12309	13813						
Adjustments to Appropriated Value		-4137	0						
FY 1998 Pres Bud Request		8172	13813	2922	18964				
<p>Change Summary Explanation:</p> <p>Funding: FY 96 - Project decremented for Army reprogramming to higher priority requirements.</p> <p>FY 98 (-6431) reduction due to Army restructure of the MPIM/SRAW program to an incremental EMD.</p> <p>FY 99 (+1618) increase due to Army restructure of the MPIM/SRAW program to an incremental EMD.</p> <p>Schedule: The Army has restructured the MPIM/SRAW program to an incremental EMD, an 18 month risk mitigation (Phase 1) prior to award of the 47-month EMD phase (Phase 2) option.</p>									
C. Other Program Funding Summary		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
PE 0603313A, Project D387		4907	625	0	0	0	0	0	0
Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)		0	0	0	0	0	5969	32195	27877
									1051000
									0
									5532
									1117041
D. Schedule Profile		FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 1999
1 2 3 4 1 2 3 4 1 2 3 4									
Preparation for Milestone II									
Model EMD contract preparation									
Award EMD Phase 1 contract									
Complete telemetry missile flight tests									
Corporate/government Phase 1 reviews									
Award EMD Phase 2 contract									
Complete EUD tests									
Conduct PDR									
Complete PPT									
X* Denotes completed effort									

Project D284

Page 4 of 24 Pages

Exhibit R-2 (PE 0604802A)

926

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

D284

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary hardware development	4851	10549	0	14300
Program management support	2991	1827	2572	2578
SBIR/STTR	0	337	0	0
Developmental Test and Evaluation	330	1100	350	2086
Total	8172	13813	2922	18964

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Lockheed-Martin Aeronautics (EMD phase 1)	SS/CPIF	Oct 96	7000	7000	0	4851	2149	0	0	0	7000
Lockheed-Martin (EMD phase 2)	SS/Cost sharing	Apr 98**	43100	43100	0	0	8400	0	14300	20400	43100
PM CCAWS, RSA	PO				0	1150	813	1205	1237	3642	8047
MICOM, RSA, AL	PO				0	1483	776	659	794	3060	6772
Misc.	PO				0	358	238	708	547	3235	5086
SBIR/STTR							337				337
TECOM: APG	PO				0	330	1100	350	2086	3972	7838
Misc.	PO				0	0	0	0	0	50	50

** April 98 contract to be awarded using FY 1997 funds.

Project D284

Page 5 of 24 Pages

Exhibit R-3 (PE 0604802A)

927

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D284

Development

	<u>FY 1996</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Total Prior to							
Subtotal Product Development	4851	10549	14300	20400	34700		
Subtotal Support and Management	2991	2164	2578	9937	15087		
Subtotal Test and Evaluation	330	1100	2086	4022	6458		
Total Project	8172	13813	18964	34359	56245		

Project D284

Page 6 of 24 Pages

Exhibit R-3 (PE 0604802A)

928

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

PROJECT

0604802A Weapons and Munitions - Engineering

D531

Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D531 105mm Howitzer Ammunition Improvement	3432	5067	0	0	0	0	0	0	0	19838

A. Mission Description and Justification: This project provides for the fielding of an extended range 105mm artillery projectile for the M119A1 Howitzer and development of self-destruct fuzing technology for munitions.

Acquisition Strategy: Initial low rate production of cartridge, artillery, 105mm Dual Purpose Improved Conventional Munition (DPICM), XM915, begins in FY 1997 and will be sole sourced to the developer under fixed price contracts.

FY 1996 Accomplishments:

- 1688 Self destruct fuze contract
- 300 Projectile metal parts contract
- 1444 Engineering evaluation of performance
- Total 3432

FY 1997 Planned Program:

- 1700 Load, assembly and pack (LAP) of cartridge for development test and evaluation
- 1785 Conduct DT&E tests
- 1458 Test and evaluation management, engineering evaluation of performance
- 124 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 5067

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project D531

Page 7 of 24 Pages

Exhibit R-2 (PE 0604802A)

929

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D531

Development

A. Project Cost Breakdown

Program engineering and management support

SBIR/STTR

Contract engineering support

Test and evaluation support

Total

FY 1996

FY 1997

FY 1998

FY 1999

1296

1458

0

0

0

124

0

0

1420

0

0

0

716

3485

0

0

3432

5067

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

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Prior to

FY 1996

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering Development

PROJECT

D613

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D613 Mortar Systems	2768	0	0	0	10966	13225	0	0	0	46942

A. Mission Description and Justification: This program provides funds to develop existing and emerging technology to enhance the effectiveness, lethality, versatility of use, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing applications, weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control, mortar ballistic computer, training devices, and ammunition. This project provides for the qualification of a full range training cartridge for the 120mm Battalion Mortar System. This cartridge provides a realistic training alternative at a lower cost than training with high explosive service ammunition. It also provides for the qualification of a mortar illumination round (conventional and infrared). Additional dollars were added in FY96 to fund Task Force XXI Advanced Warfighting Experiment on Mortar Fire Control. Starting in FY 2000, it provides for development of a digital Mortar Fire Control System (MFCS) which will reduce set up times by a factor of 8, while increasing accuracy. It will be compatible with the Advanced Field Artillery Tactical Data System (AFATDS) and fully integrate mortars into the fire support plan.

Acquisition Strategy: The full range training cartridge enters production with the developer as an option to the development contract in FY 96. Follow-on buys are competitive. The illumination round enters production in FY 97.

FY 1996 Accomplishments:

• 482	Program Manager in-house costs
• 332	Shell body producibility
• 1439	Task Force XXI demonstration support
• 116	Increment container process optimization
• 227	XM931 testing
• 48	Fin optimization/load, assembly and pack optimization
124	XM930 test hardware fabrication
Total	2768

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project D613

Page 10 of 24 Pages

Exhibit R-2 (PE 0604802A)

932

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

D613

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Values

FY 1998 Pres Bud Request

FY 1996

1556

1600

+1168

2768

FY 1997

0

0

0

0

FY 1998

0

0

0

0

FY 1999

0

0

0

0

Change Summary Explanation: Funding - FY 96 (+1168) increase to fund Task Force XXI Advanced Warfighting Experiment on Mortar Fire Control

C. Other Program Funding Summary

Procurement, Ammunition, Army:

SSN E25504, XM929

SSN E25507, XM931

SSN E25503, XM930

SSN E25501, XM934

Other Procurement, Army: K99200 (IMBC)

Other Procurement, Army: K99300 (MFCS)

FY 1996

65812

18244

0

0

4827

0

FY 1997

34967

50952

25975

0

6841

0

FY 1998

0

24432

0

29908

0

FY 1999

0

32159

0

29888

0

FY 2000

26266

40124

0

22884

0

FY 2001

26913

41356

0

0

0

FY 2002

27793

30154

0

0

0

FY 2003

24921

21216

0

0

0

To

Compl

0

0

0

0

0

Total

Cost

260039

258637

32240

161042

38649

76860

D. Schedule Profile

FY 1996

1 2 3

X*

FY 1997

1 2 3

4

FY 1998

2 3

4

FY 1999

1 2

3 4

Conduct DT/OT of the IMBC

Type classify (LP) the IMBC

Type Classify (standard) the IMBC

Type classify XM930 Illumination round

Type classify XM931 FRTC

*Completed milestone

Project D613

Page 11 of 24 Pages

Exhibit R-2 (PE 0604802A)

933

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1997		PROJECT					
BUDGET ACTIVITY										PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development										0604802A Weapons and Munitions - Engineering Development									
A. Project Cost Breakdown										FY 1996	FY 1997	FY 1998	FY 1999						
Product development										2059	0	0	0						
Management /engineering support										482	0	0	0						
Test and evaluation										227	0	0	0						
Total										2768									
B. Budget Acquisition History and Planning Information																			
Performing Organizations																			
Contractor or Government		Method/Type or Funding		Award or Obligation		Performing Activity		Project Office		Total Prior to FY 1996		FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Activity		Vehicle		Date		EAC		EAC		FY 1996		FY 1996	FY 1997	FY 1998	FY 1999				
Product Development Organizations																			
Pocal industries, Moscow, PA		SS/CPIF		2Q95		3392		3392		3344		48	0	0	0	0	3392	3392	
Miltope: Hope Hull, AL		C/FP		1Q95		310		310		310		0	0	0	0	0	310	310	
ARDEC		WR		2Q94		1124		1124		1124		1439	0	0	0	0	2563	2563	
MTA:		SS/FP		3Q94		351		351		351		0	0	0	0	0	351	351	
Huntsville, AL		SS/FP		3Q94		78		78		78		0	0	0	0	0	78	78	
Mitre:																			
Tinton Falls, NJ		WR		3Q95		1252		1252		1252		0	0	0	0	0	1252	1252	
ARDEC: M930		WR		3Q95		576		576		576		124	0	0	0	0	700	700	
Pine Bluff Arsenal		WR		3Q95		868		868		868		0	0	0	0	0	868	868	
Crane Army Depot		C/FP		3Q95		202		202		202		0	0	0	0	0	202	202	
Diehl GmbH: Ger		C/FP		3Q95		233		233		233		0	0	0	0	0	233	233	
Martin Marietta		SS/FP		3Q96		332		332		0		332	0	0	0	0	332	332	
Chamberlain Mfg		C/FP		3Q95		560		560		560		0	0	0	0	0	560	560	
Ferrulmatic: NJ		SS/FP		3Q96		116		116		0		116	0	0	0	0	116	116	
ARMTEC																			
Coacella, CA																			
Project D613										Page 12 of 24 Pages								Exhibit R-3 (PE 0604802A)	

Page 12 of 24 Pages

Exhibit R-3 (PE 0604802A)

934

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D613

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	FY 1996				FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
					Total Prior to FY 1996	FY 1996	FY 1996	FY 1996					
ARDEC: (IMBC)	WR	1Q95	1286	1286	804	1908	0	0	0	0	0	0	1908
ARDEC: (MFCS)	WR	1Q00	13156	13156	0	0	0	0	0	0	0	13156	13156
Support and Management Organizations													
PM Mortars	Allot	1Q94	1286	1286	804	1908	0	0	0	0	0	0	1286
ARDEC	WR	1Q94	3100	3100	3100	0	0	0	0	0	0	0	3100
CECOM	WR	1Q94	76	76	76	0	0	0	0	0	0	0	76
Camber Corp., NJ	SS/FP	3Q94	413	413	413	0	0	0	0	0	0	0	413
SET: TN	SS/SP	3Q94	120	120	120	0	0	0	0	0	0	0	120
PM Mtrs: IMBC	Allot	1Q95	119	119	119	0	0	0	0	0	0	0	119
ARDEC	WR	1Q95	63	63	63	0	0	0	0	0	0	0	63
ACALA	WR	1Q95	135	135	135	0	0	0	0	0	0	0	135
ARDEC: M931	WR	3Q95	3041	3041	3041	0	0	0	0	0	0	0	3041
ARDEC: (MFCS)	WR	1Q00	6765	6765	0	0	0	0	0	0	0	6765	6765
Test and Evaluation Organizations													
TECOM, WSMR, NM	WR	2Q95	130	130	130	0	0	0	0	0	0	0	130
CSTA: APG	WR	2Q95	140	140	140	0	0	0	0	0	0	0	140
WSMR: IMBC	WR	2Q95	153	153	153	0	0	0	0	0	0	0	153
WSMR: (MFCS)	WR	1Q00	4270	4270	0	0	0	0	0	0	0	4270	4270
TEXCOM Fld Spt Acty, Ft. Hood	WR	4Q95	8	8	8	0	0	0	0	0	0	0	8
CSTA: APG (M931)	WR	4Q95	987	987	760	227	0	0	0	0	0	0	987
AMSAA: APG	WR	3Q95	75	75	75	0	0	0	0	0	0	0	75
WES: Vicksburg, MS	WR	4Q95	40	40	40	0	0	0	0	0	0	0	40

Project D613

Page 13 of 24 Pages

Exhibit R-3 (PE 0604802A)

935

Item 97

UNCLASSIFIED

DATE	RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)
February 1997	

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
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0604802A Weapons and Munitions - Engineering D613

Development

	Total Prior to <u>FY 1996</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Budget to Complete	Total Program
Subtotal Product Development	10806	2059				13156	26021
Subtotal Support and Management	7871	482				6765	15118
Subtotal Test and Evaluation	1306	227				4270	5803
Total Project	19983	2768				24191	46942

Page 14 of 24 Pages

Exhibit R-3 (PE 0604802A)

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

D695

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D695 XM982	0	0	655	5901	10729	16169	0	0	0	33454

A. Mission Description and Justification: The XM982 is an extended range Dual Purpose Improved Conventional Munition (DPICM) projectile which combines base burn and rocket assisted technologies in an extended range 155mm artillery projectile. It will be compatible with all current and future 155mm artillery systems in the U. S. inventory. The XM982 will extend the range of the M198, M109A5, 155mm Paladin (M109A6), and the Light Weight Howitzer to approximately 37 kilometers. The XM982 with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. Survivability is increased by allowing greater stand-off from threats and faster defeat of potential threats.

Acquisition Strategy: Engineering and Manufacturing Development (EMD) will consist of a system contract to design, test and manufacture hardware and then produce Development Test hardware for Government Test and Evaluation. Development Testing, consisting of safety tests and firing table tests, will be accomplished by TECOM at TECOM Proving Grounds during EMD. Production will be performed by the EMD contractor. The EMD contract will include unpriced options.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

- 545 Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing.
- 110 Program management: technical evaluation; program execution
- Total 655

FY 1999 Planned Program:

- 1390 Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing.
- 4081 Contracts for propellants, fuzing and metal parts
- 110 Program management
- 320 Test and evaluation
- Total 5901

Project D695

Page 15 of 24 Pages

Exhibit R-2 (PE 0604802A)

937

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997								
BUDGET ACTIVITY		PROJECT									
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development									
		D695									
<p>B. Project Change Summary</p> <p>FY 1997 President's Budget</p> <p>Appropriated Value</p> <p>Adjustments to Appropriated Value</p> <p>FY 1998 Pres Bud Request</p>		<p>FY 1996</p> <p>0</p> <p>0</p> <p>0</p> <p>0</p>	<p>FY 1997</p> <p>0</p> <p>0</p> <p>0</p> <p>0</p>	<p>FY 1998</p> <p>0</p> <p>655</p> <p>5901</p>	<p>FY 1999</p> <p>0</p>						
<p>Change Summary Explanation: Funding: FY 1998: This program is a new start in EMD as it transitions from the technology base.</p>											
<p>C. Other Program Funding Summary</p> <p>Procurement, Ammunition, Army, SSN E80100</p> <p>Proj, Arty, 155mm XM982</p>		<p>FY 1996</p> <p>0</p>	<p>FY 1997</p> <p>0</p>	<p>FY 1998</p> <p>0</p>	<p>FY 1999</p> <p>0</p>	<p>FY 2000</p> <p>0</p>	<p>FY 2001</p> <p>0</p>	<p>FY 2002</p> <p>16753</p>	<p>FY 2003</p> <p>24979</p>	<p>To</p> <p>Compl</p> <p>Cont</p>	<p>Total</p> <p>Cost</p> <p>Cont</p>
<p>D. Schedule Profile</p> <p>Milestone II</p> <p>Award initial EMD contract</p> <p>Milestone III: 4Q FY 2002</p>		<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>

Project D695

Page 16 of 24 Pages

Exhibit R-2 (PE 0604802A)

938

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering Development

PROJECT

D712

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D712 Non-Lethal Programs	0	3215	0	0	0	0	0	0	0	3215

A. Mission Description and Justification: This program will demonstrate the application of non-lethal technologies, devices and munitions that are explicitly designed and employed to incapacitate personnel and/or materiel while minimizing fatalities and undesired damage to property and the environment. Non-lethal devices have the potential to provide the foundation for regional and peacekeeping operations to be successful, and may allow military forces to respond to such conflicts through the use of an established Graduated Response Matrix. The application of non-lethal capabilities that minimizes collateral damage while providing for safe employment and mission accomplishment will enhance operational effectiveness.

Acquisition Strategy: Upon completion of user demonstration and feedback, selected non-lethal devices/munitions will be integrated into the appropriate acquisition phase depending on their design maturity and ability to fulfill the user's needs.

FY 1996 Accomplishments: No FY 1996 program

FY 1997 Planned Program:

- 1985 Acoustics: Initiate integration of initial health hazard assessment into acoustic source design configuration and propagation measurement, for demonstration tests and potential weapon /platform applications
- 690 Kinetics: Initial validation test of health hazard (target) assessment model (HHTAM) for blunt impact munitions. Functional purchase description development for urgent release items. Safety test and evaluation of kinetic systems in support of dismounted battlespace battle lab's warfighting experiments
- 365 Entanglements: Conduct safety and performance testing of gun-fired 40mm ballistically deployed entanglement munition with integrated fuze
- 97 Vehicle stopper: Complete commercial off-the-shelf (COTS) electric discharge vehicle stopper performance evaluation
- 78 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 3215

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project D712

Page 18 of 24 Pages

Exhibit R-2 (PE 0604802A)

940

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

D712

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3284	1064	0
Appropriated Value	0	3215		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud Request	0	3215	0	0

Change summary explanation: Funding - FY 1998 (-1064) funds transferred to the Marine Corps, executive agent for non-lethal warfare. Marine Corps will continue the R&D effort.

C. Other Program Funding Summary: Not applicable.**D. Schedule Profile**

	FY 1996		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3	4
Demonstrate a 40mm weapon-launched ballistic entanglement munition								
Demonstrate a 40mm weapon launched ballistic "sticky net" munition								
Demonstrate a COTS electric discharge electric vehicle stopper			X					
Fabricate & test next generation of acoustic sources					X			

Project D712

Page 19 of 24 Pages

Exhibit R-2 (PE 0604802A)

941

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1997		PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE					
5 - Engineering and Manufacturing Development										0604802A Weapons and Munitions - Engineering Development					
A. Project Cost Breakdown															
Product development										FY 1996	FY 1997	FY 1998	FY 1999		
SBIR/STTR										0	3137	0	0		
Management and engineering support											78				
Test and evaluation										0	0	0	0		
Total											3215				
B. Budget Acquisition History and Planning Information															
Performing Organizations															
Contractor or Government															
Method/Type or Funding															
Award or Obligation Date															
Performing Activity															
Vehicle															
Product Development Organizations															
ARDEC: NJ															
CPFF															
2Q/3Q97															
ARL: MD															
NA															
2Q97															
Support and Management Organizations: None															
Test and Evaluation Organizations: None															
Government Furnished Property: Not applicable															
Subtotal Product Development										3215					
Subtotal Support and Management															
Subtotal Test and Evaluation															
Total Project										3215					
Total										3215					
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Project D712

Page 20 of 24 Pages

Exhibit R-3 (PE 0604802A)

942

Item 97

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

DAS1

Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DAS1 Small Arms Improvement	473	1566	0	0	2459	3092	3235	6772	Continuing	Continuing

A. Mission Description and Justification: This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber, 9mm), individual weapons (5.56mm-7.62mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices and ammunition. Current efforts focus on improvements to the MK19-3 Grenade Machine Gun (GMG) and M2 Heavy Barrel Machine Gun. Improvements to the M2 Heavy Barrel, Caliber .50 Machine Gun include a Quick Change Barrel (QCB) kit, mounting surfaces, and trigger safety. Improvements to the MK19-3 GMG include a universal mounting bracket that provides a common mounting interface for various fire control devices. The current rear sight lacks sufficient structural integrity to mount such devices, including night vision equipment. Funding is sufficient to complete development, testing, and modification of the MK19-3 Grenade Machine Gun technical data package (TDP) and type classification (TC) of the QCB.

Acquisition Strategy: The universal mounting bracket will enter production as an engineering change to the current MK19-3 Grenade Machine Gun technical data package. Currently fielded systems will be modified through a MK19-3 modification effort. Several non-development item (NDI) solutions exist for the caliber .50 QCB. The strategy will employ full and open competition, production qualification and operational testing leading to TC standard.

FY 1996 Planned Program:

- 101 Drafted performance specifications
- 50 Purchased commercial hardware
- 237 Performed validation testing
- 85 Finalized performance specifications
- Total 473

Project DAS1

Page 21 of 24 Pages

Exhibit R-2 (PE 0604802A)

943

Item 97

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1997	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604802A Weapons and Munitions - Engineering Development			DAS1
5 - Engineering and Manufacturing Development							
FY 1997 Planned Program:							
•	86	Solicit competitive hardware					
•	588	Conduct technical evaluation					
•	157	Award hardware contract					
•	362	Production qualification					
•	185	Operational test					
•	150	Type classification					
•	38	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs					
Total	1566						
FY 1998 Planned Program: Project not funded in FY 98							
FY 1999 Planned Program: Project not funded in FY 99							
B. Project Change Summary							
FY 1997 President's Budget		FY 1996	FY 1997	FY 1998	FY 1999		
		486	0	0	0		
Appropriated Value		500	1566				
Adjustments to Appropriated Value		-27	0				
FY 1998 Pres Bud Request		473	1566	0	0		
Summary Change Explanation: Funding - FY 97 (+1566) Congressional increase to support MK 19 modifications.							
C. Other Program Funding Summary: Not applicable.							
D. Schedule Profile							
	1	2	3	4	1	2	3
		X*					4
Draft performance specifications							
Purchase commercial hardware							
Perform validation tests							
Finalize performance specs (brackets)							
Solicit competitive hardware (QCB)							
Conduct technical evaluation (QCB)							
Project DAS1							
Exhibit R-2 (PE 0604802A)							
Page 22 of 24 Pages							

Page 22 of 24 Pages

944

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE											
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development											
		FY 1996			FY 1997			FY 1998			FY 1999		
		1	2	3	4	1	2	3	4	1	2	3	4
D. Schedule Profile													
Award hardware contract (QCB)													
Production qualification test (QCB)													
Operational test (QCB)													
Type classification (QCB)													
* Milestone completed													

Project DAS1

Page 23 of 24 Pages

Exhibit R-2 (PE 0604802A)

945

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

DAS1

	FY 1996	FY 1997	FY 1998	FY 1999	FY 1998	FY 1999	Budget to Complete	Total Program
A. Project Cost Breakdown								
Other government support	423	1300	0	0				
SBIR/STTR		38						
Program management support	50	228	0	0				
Total	473	1566						
B. Budget Acquisition History and Planning Information								
Performing Organizations								
Contractor or Government								
Performing Activity								
Method/Type or Funding								
Award or Obligation Date								
Vehicle								
Performing Activity								
EAC								
Product Development Organizations								
ARDEC								
MIPR								
2Q97								
Support and Management Organizations								
PM, Small Arms								
MIPR								
Multiple								
ACALA								
MIPR								
3Q97								
SBIR/STTR								
Test and Evaluation Organizations								
Aberdeen Test Center								
MIPR								
3Q97								
TEXCOM								
MIPR								
Contractor								
FFP								
1Q98								
1Q98								
Government Furnished Property: None								
Subtotal Product Development			473	1566				2039
Subtotal Support and Management								
Subtotal Test and Evaluation								
Total Project			473	1566				2039

Project DAS1

Page 24 of 24 Pages

Exhibit R-3 (PE 0604802A)

946

Item 97

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19132	19903	28039	26932	24393	16598	28730	31681	Continuing	Continuing
DH01 Combat Engineer Equipment Engineering Development	9901	9433	8566	7617	2621	1053	1551	11652	Continuing	Continuing
DH02 Bridge Site Mobility	0	0	0	0	0	0	5077	0	0	5100
DH14 Logistics Support Equipment Engineering Development	579	86	4829	100	105	102	103	101	Continuing	Continuing
DL39 General Support Equipment Engineering Development	1319	1641	2286	2589	2247	2187	4688	4238	Continuing	Continuing
DL41 Fuels and Equipment Engineering Development	1135	1011	1071	1081	1057	1052	1306	1314	Continuing	Continuing
DL42 Camouflage System Engineering Development	734	942	896	843	405	397	345	361	Continuing	Continuing
DL43 Engineering Development	0	0	0	1114	2802	2499	4335	2830	Continuing	Continuing
DL44 Distribution System, 105kW	0	0	0	0	0	0	805	0	0	800
D194 Engine Driven Generators Engineering Development	1423	2183	7534	9015	8184	5290	2244	1417	Continuing	Continuing
D279 Airdrop Equipment Engineering Development	1416	1414	1359	1354	1380	1371	4864	4701	Continuing	Continuing
D429 Rigid Wall Shelter Engineering Development	2296	3193	1498	1024	1159	1152	2157	2166	Continuing	Continuing
D461 Marine Oriented Logistics Equipment Engineering Development	329	0	0	2195	4433	1495	1255	2901	Continuing	Continuing

Page 1 of 43 Pages

Exhibit R-2 (PE 0604804A)

947

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development	
<p><u>Mission Description and Budget Item Justification:</u> This Program Element (PE) supports engineering and manufacturing development (EMD) of new and advanced combat support and combat service support equipment and therefore belongs in Budget Activity 5.</p>		
		Exhibit R-2 (PE 0604804A)

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1997	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DH01	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH01	Combat Engineer Equipment Engineering Development	9901	9433	8566	7617	2621	1053	1551	11652	Continuing	Continuing
<p>A. Mission Description and Budget Item: This project supports the development and transition to procurement of military tactical bridging for wet and dry gap bridging requirements such as the Common Bridge Transporter (CBT), the Improved Ribbon Bridge (IRB) Bays, and the Heavy Dry Support Bridge (HDSB). All bridging work is in support of the increased military load class (MLC) requirements for the Abrams tank. This project also provides for the non-developmental item (NDI) acquisition of the Deployable Universal Combat Earthmover (DEUCE) and market investigations of other engineer construction equipment.</p> <p>Acquisition Strategy: CBT - Competitive RDTE followed by downselect for procurement. HDSB - Competitive RDTE followed by downselect for procurement. DEUCE - Competitive procurement of integrated NDI.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 400 Conducted Source Selection for HDSB • 280 Conducted Milestone II Review for HDSB • 7446 Awarded two HDSB Engineering Manufacturing Development (EMD) contracts • 190 Initiated IRB technical and configuration baseline • 400 Conducted Milestone III for CBT • 674 Completed preproduction qualification test for DEUCE • 41 Conducted Milestone III IPR for DEUCE • 72 Conducted market investigation for construction equipment • 119 Developed armored DEUCE Cab • 279 Completed Logistics Development for the DEUCE Total 9901 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 7539 Fabricate HDSB EMD prototypes • 274 Prepare for Contractor Testing of HDSB EMD prototype • 274 Prepare for award of IRB bays RDTE contract • 1024 Initiate development and upgrade of IRB bays 											

Project DH01

Page 3 of 43 Pages

Exhibit R-2 (PE 0604804A)

949

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DH01

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

FY 1997 Planned Program: (continued)

- 92 Conduct market investigation for construction equipment
- 230 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 9433

FY 1998 Planned Program:

- 6471 Continue fabrication of HDSB prototypes
- 541 Prepare for contractor testing of the HDSB
- 655 Contractor testing of Bridge prototypes for the HDSB
- 317 Fabricate IRB prototypes
- 215 Prepare for testing of IRB prototypes
- 367 Conduct market investigation for construction equipment
- Total 8566

FY 1999 Planned Program:

- 2094 Continue fabrication of HDSB Launcher prototypes
- 923 Continue contractor testing of Bridge prototypes for the HDSB
- 3206 Initiate pre-production qualification test for HDSB
- 1026 Test IRB prototypes
- 368 Conduct market investigation for construction equipment
- Total 7617

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9425	9635	7737	4614
Appropriated Value	9691	9433		
Adjustment to Appropriated Value	+210			
FY 1998 Pres Bud Request	9901	9433	8566	7617

Change Summary Explanation:

Funding: FY 1998 funding was increased (+829k) due to expected higher HDSB fabrication costs.

FY 1999 funding was increased (+3003k) due to the requirement for a pre-production qualification test for the HDSB.

Project DH01

Page 4 of 43 Pages

Exhibit R-2 (PE 0604804A)

950

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH01

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	To	Total
RDTE, 0603804.DG01, Combat Engineer Equipment, Advanced Development							940	1415	Cont	Cont	Cont
OPA3, G82400, Heavy Dry Support Bridge							944	1415	Cont	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporter	3709	4296	4200	4303	4315	4321	9239	9554	Cont	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interior Bays					3143	3735	8332	12820	Cont	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays					1346	2124	2381	5069	Cont	Cont	Cont
OPA3, M06105, Deployable Universal Combat Earthmover	9522	7701	8885	9508	9342	7410	10317	9376	Cont	Cont	Cont
OPA3, GA1100, Line of Communications Bridge							5681	1796	Cont	Cont	Cont
OPA3, M27200 Float Bridge Propulsion							2083	4770	Cont	Cont	Cont
OPA3, GA1200 Bridge Site Mobility								4341	Cont	Cont	Cont
OPA3, Various Construction Equipment Items	21329	67249	24682	65422	71921	77645	67138	83148	Cont	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999	FY 1999	FY 1999	FY 1999
1	2	3	4	1	2	3	4	1	2	3	4	4
X*												
Conduct PQT for DEUCE												
Conduct Milestone III IPR for DEUCE												
Conduct Milestone II Review for HDSB												
Award HDSB EMD contract												
Fabricate HDSB EMD Prototypes												
Conduct Milestone III Review for CBT												
Release Request for Proposal for IRB Bays												
Award IRB bays contract												
Upgrade IRB Prototypes												
Conduct PPQT for IRB												
Conduct Construction Equipment Market Investigation												
*Milestone completed												

*Milestone completed

Project DH01

Page 5 of 43 Pages

Exhibit R-2 (PE 0604804A)

951

Item 98

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

0604804A Logistics & Engineer Equipment -

**PROJECT
DH01**

<u>A. Project Cost Breakdown</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
DH01 DEUCE & Construction Equipment				
Program Management Support	41			
Integrated Logistics Support (ILS)	279			
Prototype Hardware Development	119			
Developmental and Operational Testing	666			
Construction Equip Market Investigations	72	92	368	366
Miscellaneous	8			
DH01 BRIDGING (HDSB, CBT & IRB)				
Primary Hardware Development	7000	8563	6786	2097
Developmental Test and Evaluation	210	50	728	4138
Program Management Support (three programs)	1506	498	638	864
Miscellaneous			46	152
SBIR/STTR		230		
Total	9901	9433	8566	7617

B. Budget Acquisition History and Planning Information

Performing Organizations				Contract				Total			
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Organizations											
Caterpillar, Inc.	FFP	Jul 95	2776	2776	119	7539	7126	3019	Cont	2895	
Williams Fairley Eng Ltd/	C-CPFF	Aug 96	24684		7000					24684	
Support and Management Organizations											
Karlskronavarvet											
Contractor TBD	C-CPFF	Mar 97				1024	315		0	1339	
TARDEC					72	92	368	366	Cont	3345	

Project DH01

Page 6 of 43 Pages

Exhibit R-3 (PE 0604804A)

952

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH01

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
TECOM	1095	Various			632	876	50	73	3216	Cont	4847
Miscellaneous											
TACOM	1095	Various			638	1834	498	684	1016	Cont	4670
SBIR/STTR							230				230
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Miscellaneous					634	876	50	73	3216	Cont	Cont
Total Project					638	1834	728	684	1016	Cont	Cont
					6493	9901	9433	8566	7617		41823

Project DH01

Page 7 of 43 Pages

Exhibit R-3 (PE 0604804A)

953

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DH14	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH14	Logistics Support Equipment Engineering Development	579	86	4829	100	105	102	103	101	Continuing	Continuing
A. Mission Description and Justification: Develops and transitions to procurement a series of Material Handling Equipment (MHE) items.											
Acquisition Strategy: All Terrain Lifter Articulated System (ATLAS) - Competitive procurement of integrated NDI. Cargo Container Retriever (CCR) - Pre-Planned Product Improvements (P3I) to ATLAS. MHE - Competitive procurements for miscellaneous MHE.											
FY 1996 Accomplishments:											
•	350	Completed preproduction qualification testing of the ATLAS									
•	150	Completed ATLAS logistics development									
•	79	Conducted market investigations for MHE.									
Total	579										
FY 1997 Planned Program:											
•	25	Conduct market investigations for the Container Cargo Retriever									
•	25	Conduct market investigations for warehouse MHE									
•	34	Conduct market investigations for other general MHE									
•	2	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program									
Total	86										
FY 1998 Planned Program:											
•	82	Conduct Market investigations for Light Weight Container Handling Equipment.									
•	500	Provide engineering support for development of technical data package (TDP) for Rough Terrain Container Handler (RTCH).									
•	1000	Provide test support for development of TDP for RTCH.									
•	3000	Procure test hardware/software for development of TDP for RTCH.									
•	50	Prepare for award of FY 99 production contract for Rough Terrain Container Crane (RTCC).									
•	25	Conduct Milestone III IPR for RTCC.									
•	172	Using best value approach, conduct paper downselect for RTCC.									
Total	4829										
Project DH14		Page 8 of 43 Pages								Exhibit R-2 (PE 0604804A)	

954

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH14

FY 1999 Planned Program:

- 30 Development of performance specifications for MHE.
- 30 Conduct market investigations for warehouse MHE.
- 40 Conduct market investigations for other general MHE.
- Total 100

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

	FY 1996	FY 1997	FY 1998	FY 1999
	1324	88	88	88
	1362	86		
	-783			
	579	86	4829	100

Change Summary Explanation:

Funding: FY 1996 funding decreased (-713) due to changed Type Classification (TC) strategy for the ATLAS and funds were reprogrammed to other RDTE projects requiring additional RDTE funding and (-32) for undistributed Congressional reductions and rescissions.

FY 1998 funding was increased (+4741) to allow RDTE efforts for the RTCH and the RTCC.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0603804.DG14, Logistics Support Equipment, Advanced Development	92	86	96	98	105	101	103	100		
OPA3, M41800, All Terrain Lifting Articulating System	13640	15941	3554	10498	10505	10510	19930	23851	Cont	Cont
OPA3, MA8600, Items Less Than \$2.0M (MHE)	27543	2664	1724	1715	1854	1843	1984	1988	Cont	Cont
OPA3, M41200, Forklift, DE, PT, RT, 50,000 lbs	10587			24396	35774	50181	16863	16894	Cont	Cont
OPA3, X00900, Rough Terrain Container Crane				13844	11433	8813			Cont	34090

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
1	2	3	4	1
X*	2	3	4	1
X*	2	3	4	1

Prototype delivery (ATLAS)

Production Qualification Test (PQT)

Initiated (ATLAS)

Project DH14

Page 9 of 43 Pages

Exhibit R-2 (PE 0604804A)

955

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)													DATE		February 1997		PROJECT																			
BUDGET ACTIVITY													PE NUMBER AND TITLE						0604804A Logistics & Engineer Equipment - Engineering Development		DH14															
5 - Engineering and Manufacturing Development																																				
D. Schedule Profile													FY 1997						FY 1998				FY 1999													
													1		2		3		4		1		2		3		4		1		2		3		4	
Type Classification Generic (ATLAS)																																				
1st Production Quality call up (ATLAS)																																				
Conduct Market Investigations for MHE																																				
Award Prototype Contract for RTCH																																				
Conduct RTCH PQT																																				
Prepare/Conduct Milestone III IPR for RTCC																																				
Prepare RFP for Prod. Contract for RTCC																																				
Conduct Sole Source Evaluation Board																																				
Paper Downselect for RTCC																																				
Conduct Market Investigation for Light Weight Container Handler																																				
Develop performance specifications for MHE																																				
Conduct market investigations for warehouse MHE																																				
Conduct market investigations for other general MHE																																				
*Milestone completed																																				

Project DH14

Page 10 of 43 Pages

Exhibit R-2 (PE 0604804A)

Project DH14

Page 10 of 43 Pages

Exhibit R-2 (PE 0604804A)

956

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH14

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering and Other Support	100		300	
Primary Hardware Development			3000	
Developmental Test and Evaluation	350		1000	
Program Management Support	50		450	
Miscellaneous	79	84	79	100
SBIR/STTR		2		
Total	579	86	4829	100

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRAC	CPFF	May 95	1541	1541							1541
International											
RTCH Contractors	CPFF	Dec 97						3000			3000
TBD											

Support and Management Organizations: None

Test and Evaluation Organizations: None

Miscellaneous:

TARDEC	MIPR	Various	1270	100	84	300	100	Cont
PM CE/MHE	PO	Various	388	129		450		Cont
TECOM	MIPR	Various	670	350		1000		Cont
SBIR/STTR					2			Cont

Government Furnished Property : None

Project DH14

Page 11 of 43 Pages

Exhibit R-3 (PE 0604804A)

957

Item 98

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

**0604804A Logistics & Engineer Equipment -
Engineering Development**

**PROJECT
DH14**

Project DH14

Exhibit R-3 (PE 0604804A)

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DL39	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL39	General Support Equipment Engineering Development	1319	1641	2286	2589	2247	2187	4688	4238	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and transition to procurement water purification equipment, maintenance equipment and environmental control units (ECU) that do not use ozone depleting refrigerants.</p> <p>Acquisition Strategy: Development and transition to competitive procurement for all items under this project.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 86 Conducted tests on 36K British Thermal Units per Hour (BTUH) Environmental Control Units (ECU) prototypes. 150 Conducted Milestone I/II in process review for 1500 gallons per hour (GPH) Reverse Osmosis Water Purification Unit (ROWPU). 279 Completed trade off analysis of subsystems for 1500 GPH ROWPU. 504 Designed and fabricated integrated Test Bed Unit. 300 Initiated contract package for design/fabrication of 1500 GPH ROWPU engineering and manufacturing development (EMD) prototypes. Total 1319 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 164 Prepare data package for improved ECU procurement. 470 Perform technical feasibility testing of Integrated Test Bed Unit. 200 Update program management documentation for 1500 GPH ROWPU program. 768 Award contract for fabrication of EMD 1500 GPH ROWPU. 39 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program Total 1641 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1400 Design and fabricate EMD prototype 1500 GPH ROWPU. 435 Prepare production qualification test (PQT) and initial operational test and evaluation (IOTE) test plan for the 1500 GPH ROWPU. 451 Complete tests on 18K ECU prototype. Total 2286 											

Project DL39

Page 13 of 43 Pages

Exhibit R-2 (PE 0604804A)

959

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL39

FY 1999 Planned Program:

- 450 Complete fabrication of 1500 GPH ROWPU prototypes.
- 1200 Conduct PQT and IOT&E on the 1500 GPH ROWPU.
- 380 Update Program Management Documentation (PMD) for 1500 GPH ROWPU.
- 100 Develop purchase description for 18K ECU.
- 150 Develop purchase description for large diesel heaters (250K+ BTUH).
- 309 Complete testing of large heater prototypes.
- Total 2589

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1603	1677	2136	2356
Appropriated Value	1649	1641		
Adjustments to Appropriated Value	-330			
FY 1998 Pres Bud Request	1319	1641	2286	2589

Change Summary Explanation:

Funding: FY 1996 funding was decreased (-246) due to reprogramming to higher Army priority RDTE projects and (-38) for undistributed Congressional reductions and rescissions.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0603804.DK39, General Support Equipment Advanced Development	707	851	1689	1809	1980	2103	2424	2431	Cont	Cont
OPA 3, MF9300, Air Conditioners, Various Sizes	3083	1461	1468	4770	4637	4712	1438	1988	Cont	Cont
OPA 3, MA7600, Items Less Than \$2.0M (Water Equipment)	2584	2968	2862	6464	9098	8505	5654	4391	Cont	Cont
OPA 3, R05100, Water Purifier Unit Reverse Osmosis 3000 GPH				28345	28490	33283	19554	10628	Cont	Cont
OPA 3, R05200, Water Purifier Unit Reverse Osmosis 1500 GPH							5963		Cont	Cont
OPA 3, M27400, Tactical Water Distribution System					5116	5073	4365	0	Cont	Cont

Project DL39

Page 14 of 43 Pages

Exhibit R-2 (PE 0604804A)

960

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE							
5 - Engineering and Manufacturing Development		February 1997							
		PROJECT							
		DL39							
		0604804A Logistics & Engineer Equipment - Engineering Development							
		PE NUMBER AND TITLE							
		FY 1996							
		FY 1997							
		FY 1998							
		FY 1999							
		1 2 3 4 1 2 3 4 1 2 3 4							
D. Schedule Profile									
Conduct tests on 36K British Thermal Units per Hour (BTUH) Environmental Control Units (ECU) prototypes									
Conduct Milestone I/II In Process Review for 1500 GPH ROWPU		X*							
Complete trade-off analysis of subsystem for 1500 GPH ROWPU		X*							
Initiate contract package for design/fabrication of 1500 GPH ROWPU EMD prototypes		X*							
Award 1500 GPH ROWPU EMD prototype contract		X							
Update Program Management Documentation		X							
Initiate design and fabrication of the prototype 1500 GPH ROWPU		X							
Prepare PQT and IOT&E test plans for 1500 GPH ROWPU		X							
Complete 18K ECU tests		X							
Complete fabrication of 1500 GPH ROWPU prototypes		X							
Conduct PQT and IOT&E for 1500 GPH ROWPU		X							
Update PMD 1500 GPH ROWPU		X							
Develop 18K ECU purchase description		X							
Develop large diesel heater purchase description/complete tests		X							
*Milestone completed									
Project DL39									

Exhibit R-2 (PE 0604804A)

Page 15 of 43 Pages

961

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1997		PROJECT	
BUDGET ACTIVITY				PE NUMBER AND TITLE										PROJECT	
5 - Engineering and Manufacturing Development				0604804A Logistics & Engineer Equipment - Engineering Development										DL39	
A. Project Cost Breakdown															
Hardware Development				FY 1996	FY 1997	FY 1998	FY 1999								
				806	831	1325	1295								
Operational Test and Evaluation															
Development Test and Evaluation				86	450	500	855								
Government Engineering and Support				325	261	331	265								
Government Program Support				50	60	100	103								
Miscellaneous				52		30	71								
SBIR/STTR					39										
Total				1319	1641	2286	2589								
B. Budget Acquisition History and Planning Information															
Performing Organizations															
Contractor or Government		Contract		Method/Type or Funding		Award or Obligation		Performing Activity		Project Office		Total			
Performing Activity		Vehicle		Date		EAC		EAC		FY 1996		FY 1996			
Product Development Organizations: None															
Support and Management Organizations: None															
Test and Evaluation Organizations: None															
Miscellaneous															
TARDEC		In-House		Various		970		643		350		Cont			
CECOM		In-House		Various				86		71		Cont			
Radian		Task Order		Various		25				100		Cont			
CRREL		MIPR		Various		75		20		20		Cont			
Dugway PG		MIPR		Various		25		30		50		Cont			
BRTRC		Task Order		Various		170		24		100		Cont			
ARL		MIPR		Various		25		15		50		Cont			
ATCOM		MIPR		Various		55		15		50		Cont			
Vitro Inc.		Task Order		Various		83		36		50		Cont			
NSF		MIPR		Jan 95		85						Cont			
USBR		MIPR		Feb 95		30						Cont			
Exhibit R-3 (PE 0604804A)															
Page 16 of 43 Pages															
Project DL39															

Project DL39

Page 16 of 43 Pages

Exhibit R-3 (PE 0604804A)

962

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL39

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM	MIPR	Various			12			100	100	Cont	Cont
CHIPPM	MIPR	Various				50		10	25	Cont	Cont
NFESC	MIPR	Various				400	200	250	250	Cont	Cont
TECOM	MIPR	Various					50	325	650	Cont	Cont
Dugway PG	MIPR						50		10	Cont	60
Contractor (TBD)	CPFF	Dec 96					461	800	400	Cont	Cont
Contractor (TBD)	CPFF	Various						163	208	Cont	Cont
MTMC	MIPR	Various							10	Cont	Cont
SBIR/STTR							39			Cont	Cont
Government Furnished Property - None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Subtotal Miscellaneous					1555	1319	1641	2286	2589	Cont	Cont
Total Project					1555	1319	1641	2286	2589	Cont	Cont

Project DL39

Page 17 of 43 Pages

Exhibit R-3 (PE 0604804A)

963

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering DevelopmentPROJECT
DL41

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL41 Fuels and Equipment Engineering Development	1135	1011	1071	1081	1057	1052	1306	1314	Continuing	Continuing

A. Mission Description and Justification: Develop and transition to procurement petroleum storage and distribution systems.**Acquisition Strategy:** Development of and transition to competitive procurement for all items under this project.**FY 1996 Accomplishments:**

- 495 Completed Phase II PPQT, logistics demonstration, and physical configuration audit for Lightweight Arctic Forward Area Refueling (LAFARE).
- 100 Conducted Milestone III - type classification for LAFARE.
- 430 Performed market investigation and tested improved Tactical Fuel Storage and Distribution System (TFSD) candidate items.
- 60 Prepared statement of work and specifications for design and testing of TFSD components.
- 50 Continued long term exposure testing of tank fabrics.
- Total 1135

FY 1997 Planned Program:

- 35 Award TFSD design contract.
- 667 Design and fabricate TFSD initial prototypes.
- 150 Initiate TFSD component testing.
- 85 Procure long lead items for petroleum quality analysis set (PQAS) EMD prototypes.
- 50 Continue long term exposure testing of tank fabrics.
- 24 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 1011

FY 1998 Planned Program:

- 150 Prepare contract package for PQAS EMD contract.
- 70 Administer source selection process for PQAS.
- 230 Develop PQAS specification.
- 421 Continue fabrication, assembly and testing TFSD components.
- 200 Continue long term exposure and durability testing of tank fabrics.
- Total 1071

Project DL41

Page 18 of 43 Pages

Exhibit R-2 (PE 0604804A)

964

Item 98

UNCLASSIFIED

[illegible]

Page 19 of 43 Pages

Exhibit R-2 (PE 0604804A)

965

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL41

A. Project Cost Breakdown

Hardware Development	FY 1996	FY 1997	FY 1998	FY 1999
	613	421	301	751
Test and Evaluation	103	46	230	80
Government Engineering and Support	346	470	450	160
Government Program Support	73	50	90	90
SBIR/STTR		24		
Total	1135	1011	1071	1081

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	--------------------------------	--------------------------	---------------------	--------------------	------------------------	---------	---------	---------	---------	--------------------	---------------

Product Development Organizations -TARDEC

Support and Management Organizations - ARL, Navy, ATCOM

Test and Evaluation Organizations - TECOM, TEXCOM

Miscellaneous:

TARDEC	In-House	Various			242	298	500	450	311	Cont	Cont
Contractors	Various	Various			2566	529	437	446	720	Cont	Cont
TECOM	MIPR	9702			24	113	40	50	30	Cont	Cont
TEXCOM	MIPR	9402			20	10	10			Cont	Cont
ARL	MIPR	9602				25		25	20	Cont	Cont
Navy	MIPR	9701				160		100		Cont	Cont
SBIR/STTR							24			Cont	Cont

Government Furnished Property - None

Subtotal Miscellaneous

Total Project

					2852	1135	1011	1071	1081	Cont	Cont
					1428	1135	1011	1071	1081	Cont	Cont

Project DL41

Page 21 of 43 Pages

Exhibit R-3 (PE 0604804A)

967

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL42

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL42 Camouflage System Engineering Development	734	942	896	843	405	397	345	361	Continuing	Continuing

A. Mission Description and Justification: Project DL42, which was restructured in FY 96 from DH01, provides for development and transition to procurement low cost, low observable systems for suppression of visual, near-infrared, thermal, radar, and acoustic signatures of highly mobile and semi-mobile weapon assets.

Acquisition Strategy: Develop camouflage systems for the Services and transition items to competitive procurement.

FY 1996 Accomplishments:

- 734 Conducted production prove-out testing for desert Ultralightweight Camouflage Screening System (ULCANS).
- Total 734

FY 1997 Planned Program:

- 539 Develop desert ULCANS.
- 380 Develop urban ULCANS for Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD).
- 23 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
- Total 942

FY 1998 Planned Program:

- 534 Continue development of ULCANS.
- 250 Demonstrate urban ULCANS for MOUT ACTD.
- 112 Incorporate desert ULCANS
- Total 896

FY 1999 Planned Program:

- 400 Develop hyperspectral signature enhancements in ULCANS.
- 329 Develop multispectral camouflage system (MSCS) - mobile equipment.
- 114 Incorporate arctic and urban ULCANS.
- Total 843

Project DL42

Page 22 of 43 Pages

Exhibit R-2 (PE 0604804A)

968

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			DL42
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development			
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support		294	379	400	400
Contractor Engineering Support		150	340	284	229
Developmental Test and Evaluation		250	150	150	150
Travel		40	30	30	30
Miscellaneous			20	32	34
SBIR/STTR			23		
Total		734	942	896	843
B. Budget Acquisition History and Planning Information: None					

Project DL42

Page 24 of 43 Pages

Exhibit R-3 (PE 0604804A)

970

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL43

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL43 Engineering Development	0	0	0	1114	2802	2499	4335	2830	Continuing	Continuing

A. Mission Description and Justification: Develops engineer support equipment such as firetrucks, electrical distribution systems, and floodlights which are used for garrison and field operations.

Acquisition Strategy: EMD and transition to production.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 400 Develop performance specifications for multiple Engineer Support Equipment (ESE).
- 500 Conduct market investigation for multiple ESE items.
- 214 Conduct market investigation testing for multiple ESE items.

Total 1114

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

	FY 1996	FY 1997	FY 1998	FY 1999
	0	0	0	0
	0	0	0	1114

Change Summary Explanation: Project is a new start in FY 1999 and was therefore increased (+1114).

Project DL43

Page 25 of 43 Pages

Exhibit R-2 (PE 0604804A)

971

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604804A Logistics & Engineer Equipment -
Engineering Development

PROJECT

DL43

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
OPA 3, M15800, Truck, Firefighting, Multipurpose				2137	4354	4485	4707	3244	Cont	
OPA 3, M56400, Generator Set, DE, 750kW							3187	3287	Cont	
OPA 3, M59100, Distribution System, 150kW							2990	3084	Cont	
OPA 3, M72100, Floodlight Set, Electric, Trailer Mounted				1994	1993	1993	4045	4212	Cont	
OPA 3, MA8050, Items Less than \$2.0M (CSS Equipment)	4620	1152	1180	3891	3039	4336	13516	13288	Cont	

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
1	2	3	4	1	4	2	3	1	2	4
Conduct market investigation										
Conduct pre-production testing										
Develop performance specifications										

Project DL43

Page 26 of 43 Pages

Exhibit R-2 (PE 0604804A)

972

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL43

A. Project Cost Breakdown

Developmental Test and Evaluation
Performance Specification Development
Market Investigations
Total

FY 1996	FY 1997	FY 1998	FY 1999
			200
			400
			514
			1114

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government
Performing
Activity

Method/Type
or FundingVehicle
DateAward or
ObligationPerforming
ActivityProject
Office

EAC

Total
Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to
CompleteTotal
Program

Product Development Organizations: None

Support and Management Organizations: None

Test and Evaluation Organizations: None

Miscellaneous

TARDEC

PO

Various

MIPR

Various

914

200

Cont

Cont

Cont

Cont

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Subtotal Miscellaneous

Total Project

1114

1114

Cont

Cont

Cont

Cont

Project DL43

Page 27 of 43 Pages

Exhibit R-3 (PE 0604804A)

973

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604804A Logistics & Engineer Equipment -
Engineering Development

PROJECT

D194

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D194 Engine Driven Generators Engineering Development	1423	2183	7534	9015	8184	5290	2244	1417	Continuing	Continuing

A. Mission Description and Justification: Develop and transition to procurement a series of diesel engine driven generator sets/auxiliary power units and provide continual modernization of fielded sets in order to meet federally mandated environmental statutes with reduced weight and size and reduced thermal signatures.

Acquisition Strategy: Develop and transition to competitive procurement all items in this project.

FY 1996 Accomplishments:

- 261 Began fabrication of 5kW 28 Volt Direct Current (VDC) Auxiliary Power Unit (APU) Pre-Production Qualification Test (PPQT) models.
- 245 Began testing of 5kW 28VDC APU PPQT models.
- 267 Completed fabrication of 5kW 28VDC APU PPQT models.
- 650 Awarded competitive contracts for design and prototype development of 3kW Tactical Quiet Generator (TQG).
- Total 1423

FY 1997 Planned Program:

- 130 Complete testing of 5kW 28VDC APU PPQT models.
- 129 Complete preparation of formal program review of 5kW 28VDC APU.
- 1568 Continue development of 3kW TQG sets.
- 311 Evaluate designs for lightweight 3kW TQG sets from competitive contract.
- 45 Small Business Innovation Research/Small business Technology Transfer (SBIR/STTR) Program
- Total 2183

FY 1998 Planned Program:

- 2400 Continue hardware development for 3kW TQG
- 2100 Test and evaluation for the 3kW TQG
- 759 Develop logistics data for the 3kW TQG
- 1900 Initiate hardware development for Prime Power System (PPS)
- 375 Initiate 100 & 200kW Utility Set Program
- Total 7534

Project D194

Page 28 of 43 Pages

Exhibit R-2 (PE 0604804A)

974

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D194

FY 1999 Planned Program:

- 400 Complete development, testing, and transition 3kW generator set to procurement.
- 5015 Complete hardware and initiate test/evaluation of PPS
- 3600 Initiate hardware development for 100 & 200kW sets
- Total 9015

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	812	2230	269	286
Appropriated Value	833	2183		
Adjustments to Appropriated Value	+590			
FY 1998 Pres Bud Request	1423	2183	7534	9015

Change Summary Explanation:

Funding: FY 1996 funding was increased (+611) to allow acceleration of the 3kW TQG.

FY 1998 (+7265)/FY 1999 (+8729) increase to allow RDTE on 3kW TQG, PPS and 100 & 200kW Utility Set Program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E;PE0603804A/DG11	216	213	214	1371	1020	743	616	570	Cont	Cont
OPA,BA3;Generators & Assoc Equip (MA9800)	13482	29980	7706	74952	101113	90717	43990	41452	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
Begin fabrication of 5kW 28VDC APU	1	2	1	2	4	1	3	4	2
PQT models	X*								3
Begin testing of 5kW 28VDC APU PQT models									4
Complete fabrication of 5kW 28VDC PQT models									
Complete testing of 5kW 28VDC APU PQT models									

Project D194

Page 29 of 43 Pages

Exhibit R-2 (PE 0604804A)

975

Item 98

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT

D194

D. <u>Schedule Profile</u>																
	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete preparation of formal program review of 5kW 28VDC APU																
Begin development of 3kW (TQG)		X*														
Award competitive contracts for design and prototype development of 3kW sets (Phase I)																
Evaluate competitive designs for lightweight 3kW generator sets (Phase I)								X								
Continue hardware development and complete Phase I, downselect to one contractor, and initiate Phase II hardware delivery, testing and logistics data									X							
Complete data and testing and transition 3kW to procurement (Milestone III)														X		
Award multiple contracts for competitive designs of Prime Power Systems (PPS)										X						
Evaluate PPS designs and downselect to single contractor													X			
Award Phase II of PPS EMD for fabrication/test/eval/data														X		
Initiate EMD testing of PPS																X
Initiate EMD program on 100 & 200kW utility sets											X					
Award multiple contracts for competitive designs/hardware/testing of 100 & 200kW sets														X		

* Milestone completed

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			0604804A Logistics & Engineer Equipment - Engineering Development		
	FY 1996	FY 1997	FY 1998	FY 1999		D194
A. Project Cost Breakdown						
Primary Hardware Development	1008	1478	3700	5400		
Test and Evaluation	182	130	2100	1900		
Government Engineering & Support	70	430	1100	1200		
Program Management	75	60	565	515		
Miscellaneous	88	40	69			
SBIR/STTR		45				
Total	1423	2183	7534	9015		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government						
Method/Type or Funding Vehicle						
Award or Obligation Date						
Performing Activity						
Project Office						
EAC						
Performing Activity						
EAC						
Total						
Product Development Organizations						
Contractors						
CPFF						
9406						
Various						
1008						
1448						
4500						
6600						
Cont						
13556						
Support and Management Organizations						
None						
Test and Evaluation Organizations						
Miscellaneous:						
CECOM						
In-House						
Various						
TECOM						
MIPR						
Various						
SBIR/STTR						
NA						
215						
510						
1734						
Cont						
4174						
200						
180						
700						
Cont						
2380						
45						
45						
Government Furnished Property						
None						
Subtotal Product Development						
1008						
1448						
4500						
6600						
13556						
Subtotal Support and Management						
415						
735						
2415						
6599						
Subtotal Test and Evaluation						
1423						
2183						
9015						
20155						
Total Project						
Exhibit R-3 (PE 0604804A)						
Project D194						

Page 31 of 43 Pages

977

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								D279	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D279	Airdrop Equipment Engineering Development	1416	1414	1359	1354	1380	1371	4864	4701	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and transition to procurement cargo and personnel parachutes, airdrop containers and associated equipment. Air delivery equipment will improve safety and facilitate airborne cargo insertions into non-permissive environments.</p> <p>Acquisition Strategy: Developments transition to competitive procurement.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 343 Type classified 60,000 pound airdrop system (single and linked platform). • 300 Completed the Army airdrop capability effort directly supporting the USAF C17 program ensuring a fully operational airborne capability and improving airborne soldier safety. • 773 Conducted technical/operational tests of the Guided Parafoil Air Drop System - Light (GPADS-L) as part of the Warfighting Rapid Acquisition Program (WRAP). <p>Total 1416</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 300 Fabricate test items and conduct technical testing of prototype Advanced Research Parachute System (ARPS) to improve the safety and lethality of Force XXI Airborne assault operations. • 1079 Acquire and evaluate prototype systems for 500 foot, medium weight (20,000 lbs) Air Drop System providing improved accuracy and significantly reduced vulnerability for Army combat equipment and USAF delivery aircraft, during airborne assault operations. • 35 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program <p>Total 1414</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1200 Conduct component development for ARPS. Begin developmental testing for ARPS. • 159 Initiate combined Technical Test/User Test for 500 foot Low Velocity Aerial Delivery System (LVADS) - Medium. <p>Total 1359</p>											

Project D279

Page 32 of 43 Pages

Exhibit R-2 (PE 0604804A)

978

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D279

FY 1999 Planned Program:

- 600 Complete development testing for ARPS.
- 500 Complete test and evaluation and type classify 500 foot LVADS - Medium.
- 254 Initiate program for Advanced Parafail Aerial Delivery System (APADS)/GPADS - Medium.

Total 1354

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
1452	1444	1452	1452
1493	1414		
-77			
1416	1414	1359	1354

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0603804.D266, Airdrop Equipment	1116	1414	1359	1353	1336	1503	4864	4700		
Advanced Development										
OPA 3, R10901, Low Velocity Airdrop Delivery					1586	1090				2676
System (LVADS)										
OPA 3, R10903 Enhanced Container Delivery					5252					
System (ECDS)										
OPA 3, R10904 Advanced Tactical Parachute						14874				
Delivery System (ATPDS)										

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
Support USAF to Defense Acquisition Board	1	2	3	4
(DAB) Decision on C-17 Aircraft				
Type Classify 60K airdrop system				
GPADS-L TT and CT				
Award ARPS TOA and design contract				

Project D279

Page 33 of 43 Pages

Exhibit R-2 (PE 0604804A)

979

Item 98

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604804A Logistics & Engineer Equipment -

D279

FY 1997

FY 1996

FY 1998

FY 1990

•

X

X

X

***Milestone completed**

Page 34 of 43 Pages

Exhibit R-2 (PF 0604804A)

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D279

A. Project Cost Breakdown
 Primary Hardware Development 936
 Program Management Support 185
 Test and Evaluation 295
 SBIR/STTR 35
 Total 1416

FY 1997 924
 FY 1998 149
 FY 1999 741
 155 210 163
 300 1000 450
 35
 1414 1359 1354

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or

Government Method/Type Award or Performing
 Performing or Funding Obligation Activity
 Activity Vehicle Date EAC

Project Office
 EAC

Total
 Prior to
 FY 1996

Budget to
 Complete

FY 1996
 FY 1997
 FY 1998
 FY 1999
 Total
 Program

Product Development Organizations

SSCOM In-House
 Metric Systems TBD
 MICOM MIPR
 DA Staff

16947 936 924 159 754
 Cont
 Cont
 Cont

19720

Def Eval Spt Acty

Army Nat'l Guard

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

SSCOM In-House
 Ft. Bragg MIPR
 TECOM/YPG
 SBIR/STTR

2390 185 155 200 150
 6023 295 300 1000 450

Cont
 Cont
 Cont

3080
 8068

Government Furnished Property: None

35

35

Project D279

Page 35 of 43 Pages

Exhibit R-3 (PE 0604804A)

981

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development			D279	
		Total			Budget to	Total
		Prior to			Complete	Program
		FY 1996	FY 1996	FY 1997	FY 1998	FY 1999
		16947	936	924	159	754
	Subtotal Product Development	2390	185	155	200	150
	Subtotal Support and Management	6023	295	335	1000	450
	Subtotal Test and Evaluation	25360	1416	1414	1359	1354
	Total Project					
						19720
						3080
						8103
						30903

Project D279

Page 36 of 43 Pages

Exhibit R-3 (PE 0604804A)

Project D279

Page 36 of 43 Pages

Exhibit R-3 (PE 0604804A)

982

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development							February 1997	D429	
	COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D429	Rigid Wall Shelter Engineering Development	2296	3193	1498	1024	1159	1152	2157	2166	Continuing	Continuing
<p>A. Mission Description and Justification: Develops a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.</p> <p>Acquisition Strategy: Developments transition to procurement funded through PM interchange requirements, except the Large Standard Integrated Command Post System (SICPS) shelter will be procured through OPA2.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 826 Type classified version 3 of the SICPS shelter. 548 Tested new technology components [engine, generator, Environmental Control Unit (ECU), regenerative Chemical Biological (CB) filters] for objective SICPS; lighter weight, quieter, less maintenance. 269 Fabricated International Standards Organization (ISO) P3I components. 653 Fabricated Upgraded Lightweight Multipurpose Shelter (LMS) prototypes. <p>Total 2296</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 490 Conduct Technical Testing of ISO P3I Components. 570 Conduct testing of LMS upgrade. 915 Conduct testing of new technology SICPS components. 1140 Complete design and begin fabrication of large SICPS P3I components (on-board power and collective protection). 78 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program <p>Total 3193</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 306 Complete development of ISO Component P3I. 306 Complete development of LMS upgrade. 451 Develop new component technology for SICPS P3I Shelter. 435 Develop concept design of the Ballistically Hardened Shelter (BHS). <p>Total 1498</p>											

Project D429

Page 37 of 43 Pages

Exhibit R-2 (PE 0604804A)

983

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development		D429	
FY 1999 Planned Program:					
<ul style="list-style-type: none">600 Award design and fabrication contract for the BHS.424 Conduct front end analysis on Camouflage, Concealment and Detection (CCD) Shelter.					
Total 1024					
B. Project Change Summary					
FY 1997 President's Budget					
Appropriated Value					
Adjustments to Appropriated Value					
FY 1998 Pres Bud Request					
Change Summary Explanation: Funding: FY 1996 funding was decreased (-495) for undistributed Congressional and reductions and rescissions.					
FY 1998 funding decrease (-888) necessary to realign to ATCCS program to reduce fielding delays.					
C. Other Program Funding Summary					
RDTE, 0603804.D428, Rigid Wall Shelter					
Engineering Development					
FY 1996 FY 1997 FY 1998 FY 1999 FY 2000 FY 2001 FY 2002 FY 2003 To Total					
2464 3868 2431 870 983 977 1970 1977 Compl Cost					
Cont Cont					
Project D429					
Page 38 of 43 Pages					
Exhibit R-2 (PE 0604804A)					

Project D429

Page 38 of 43 Pages

Exhibit R-2 (PE 0604804A)

984

Item 98

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT

D429

<u>D. Schedule Profile</u>	FY 1996	FY 1997	FY 1998	FY 1999
Milestone III for non-expandable Electro-Magnetic Interference (EMI) ISO shelter TT of ISO EMI P3I components	X*			
Milestone III version 3 SICPS Rigid Wall Shelter				
TT LMS Upgrade				
Complete ISO EMI P3I				
Complete LMS Upgrade				
Develop SICPS P3I technology				
Develop BHS Concept				
Award BHS prototype contract				
Conduct CCD FEA				

***Milestone completed**

Project D429

Page 39 of 43 Pages

Exhibit R-2 (PE 0604804A)

985

Item 98

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT

D429

A. Project Cost Breakdown					
FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Primary Hardware Development	960	761	519		
Program Management Support	490	369	252		
Test and Evaluation	846	368	253		
SBIR/STTR	78				
Total	2296	1498	1024		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996
				EAC	FY 1996
Product Development Organizations					
SSCOM	In- House				960
DEEPCO	Various				12660
(Also Radian, GTS.)					
Ft. Belvoir	MIPR				
(Also TEXCOM, ATCOM,					
USA Med,					
ARL,					
Guard.)					
Support and Management Organizations					
SSCOM					490
					5551
Test and Evaluation Organizations					
TECOM					846
					8279
SBIR/STTR					78
Government Furnished Property: None					
Subtotal Product Development					960
Subtotal Support and Management					490
Subtotal Test and Evaluation					846
Total Project					2296
					12660
					5551
					8279
					26490
					1423
					761
					519
					252
					253
					1024
					1498
					78
					10626
					7474
					16323
					7474
					10704
					34501

Project D429

Page 40 of 43 Pages

Exhibit R-3 (PE 0604804A)

986

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								D461	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D461	Marine Oriented Logistics Equipment Engineering Development	329	0	0	2195	4433	1495	1255	2901	Continuing	Continuing
<p>A. Mission Description and Justification: This project provides engineering development of Army watercraft systems. Efforts for the Pusher Tug and Floating Crane will provide the engineering development necessary to meet the operational requirements for these craft. The FY 96 effort completed the Lighter Amphibian Resupply Cargo -60 (LARC-LX) phase, began a prototype for Communication, Electronic, and Navigation (CEN) suite, and completed anchor mooring and safety enhancements for the Causeway. FY 99 efforts will include full scale prototyping for the Containerized Maintenance Facility (CMF); full scale development of the Rapidly Installed Breakwater (RIB); and initiate development of the Harbor Master Communication Center (HMCC).</p> <p>Acquisition Strategy: Floating Crane -- Competitive procurement to performance specification. Pusher Tug -- Competitive procurement to performance specification</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> 45 Developed optimum "pusher knee" configuration for the pusher tug. 45 Developed the design and storage of camel for interface between floating crane and cargo ships. 58 Completed mooring, anchor, and safety enhancements for Causeway. 136 Began prototype effort of Communications, Electronics, and Navigation suite for watercraft. 45 Completed test and evaluation of LARC-LX prototype. <p>Total 329</p> <p>FY 1997 Planned Program: Project not funded in FY 97</p> <p>FY 1998 Planned Program: Project not funded in FY 98</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 812 Full scale development of the Containerized Maintenance Facility (CMF). 1309 Full scale development of the Rapidly Installed Breakwater (RIB). 74 Initiate development of the Harbor Master Communication Center (HMCC). <p>Total 2195</p>											

Project D461

Page 41 of 43 Pages

Exhibit R-2 (PE 0604804A)

987

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development**0604804A Logistics & Engineer Equipment -
Engineering Development****D461****B. Project Change Summary**

	FY 1996	FY 1997	FY 1998	FY 1999	Total
FY 1997 President's Budget	339	0	0	2366	
Appropriated Value	348				
Adjustments to Appropriated Value	-19				
FY 1998 Pres Bud Request	329	0	0	2195	

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0603804A, D526, Marine Oriented Logistics, Davanced Development				330	1210	0	1351	703		
OPA 3, M32400, Floating Crane, 100-250 Ton		14317	14073	14009	13986	13893				70278
OPA 3, M44500, Pusher Tug, Small		6877	6782	4000			5000	4000	Cont	1589
OPA 3, M32500, Rapidly Installed Breakwater	3652				1589					2972
OPA 3, M11300, Containerized Maintenance Facility			0	978	997	997				

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 1999	FY 1999
1	2	3	4	1	2	3
Pusher Tug contract award						
Pusher Tug material release						
Floating Crane Milestone I/III						
Floating Crane contract award						
Rapidly Installed Breakwater Prototype						
Containerized Maintenance Facility						
contract award						
Initiate Development of the Harbor						
Master Communication Center						

*Milestone completed

Project D461

Page 42 of 43 Pages

Exhibit R-2 (PE 0604804A)

988

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D461

A. Project Cost Breakdown

Contractor Engineering Support (includes test & evaluation)

Program Management Support

Total

FY 1996

299

30

329

FY 1997

FY 1998

FY 1999

2112

83

2195

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Vehicle

SS-FP

Consultants, Inc.

Support and Management Organizations

ATCOM

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project

Office

EAC

Performing

Activity

EAC

Award or

Obligation

Date

Contract

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Cont

Cont

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Cont

989

Project D461

Page 43 of 43 Pages

Exhibit R-3 (PE 0604804A)

Item 98

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604805A Command, Control, Communications
Systems - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16740	9556	11052	16395	16423	15890	15768	15629	Continuing	Continuing
D097 C3I Interoperability Network Activity	4090	1660	4178	4274	3180	3195	3090	3210	Continuing	Continuing
D098 Tactical Radio Accessories	185	542	508	506	0	0	0	0	0	4734
D282 SINGGARS-V Engineering Development	7189	6883	0	0	0	0	0	0	0	19897
D485 C4I Interoperability Standardization and Certification	1892	471	3205	5078	5419	4786	4550	4405	Continuing	Continuing
D488 Tactical Net Radio Communications	3384	0	0	0	0	0	0	0	Continuing	Continuing
D589 Army Systems Engineering & Warfighting Technical Support	0	0	3161	6537	7824	7909	8128	8014	Continuing	Continuing

Mission Description and Budget Item Justification: Supports the Army Enterprise Strategy to achieve interoperability within the Army and with the Joint/Combined forces. This program includes Engineering and Manufacturing Development (EMD), interoperability evaluation of Army command, control, communications and intelligence (C3I) systems and equipment, and the supporting interoperability facilities. Also included is engineering development of life-cycle capability to develop, test, and maintain interoperability, and support an interoperability development and evaluation process consisting of an Army interoperability board and technical management to ensure that the integration of new technologies for emerging systems support joint interoperable Force XXI architecture for Army battlefield digitization. Also included is the Army portion of engineering development efforts in support of the Combat Survivor Evader Locator System (CSEL). This includes the Single Channel Ground and Airborne Radio System (SINGGARS) product improvements identified in the SINGGARS System Improvement Plan; the Frequency Hopping Multiplexer (FH MUX) which allows multiple radios to operate on one antenna for reduced visual signature and rapid transportability and set-up; and follow-on programs to demonstrated technologies evolving from Wireless Network Access, Communications Network Planning and Management and initiatives to establish a Multiband Radio Integrated testbed. The projects in this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition process and therefore are correctly placed in Budget Activity 5.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development								D097	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D097	C3I Interoperability Network Activity	4090	1660	4178	4274	3180	3195	3090	3210	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D097 - C3I Interoperability Network Activity: CECOM has been designated the System Engineer and Army Interoperability Certifier for the Army's Force XXI Battlefield Digitization. CECOM as a material developer, directly supports the PEOs/PMs in the Development and Acquisition of Command, Control, Communications, Computer and Intelligence/Electronic Warfare (C4I/EW) systems. CECOM also has the life-cycle software engineering mission to sustain hundreds of these systems when fielded. The Digital Integrated Lab (DIL) was established to significantly improve the Army's ability to ensure interoperability on the digital battlefield. The Army Interoperability Network (AIN) provides a wide area communications backbone to electronically link geographically dispersed C4I elements whether "stand alone" or embedded within a weapons platform, and has been endorsed by senior OSD and DA officials. The AIN suite of distributed communication sites and services provides the communications network necessary to electronically connect remote C4I/EW systems, labs/testbeds, field sites, developer facilities and Battle Labs. The DIL/AIN rapidly replicates existing and evolving tactical battlefield environments to enable and facilitate comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products and systems interoperability. It is a virtual lab that integrates the Army's many programs and products, horizontally. The DIL remote external connections are provided for, primarily, by the AIN. The project also includes the development and evolutionary upgrades of protocol test tools to assure the capability to assess interoperability and compliance with the Army's Technical Architecture's Variable Message Format (VMF) and MIL-STD-188-220A standards suites. In addition it provides the capabilities to develop, test and maintain interoperability and support a continuous life-cycle interoperability development and evaluation process. Overall, this facilitates the software development process and allows interoperability to be built into the C4I/EW systems, by supporting affordable continuous sustainment and modernization of Army C4I/EW systems for the warfighter and Force XXI.

Acquisition Strategy: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1996 Accomplishments:

- 115 Sustained AIN Hub sites and communications
- 1207 Provided 5000+ test days of AIN support to DIL, PEOs, PMs, PDSS, etc., to achieve sustained C4I system/software Army/Joint interoperability
- 1315 Provided remote external digitization connections and telecommunications services for the DIL
- 827 Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
- 126 Essential AIN modernization to meet requirements
- 225 AIN remote site sustainment upgrades, capital equipment improvements
- 275 DIL test equipment, surrogate hardware, capital improvements to support Force XXI
- Total 4090

Project D097

Page 2 of 19 Pages

Exhibit R-2 (PE 0604805A)

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D097

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering Development

FY 1997 Planned Program:

- 123 Sustain AIN Hub sites and communications
- 1076 Provide 5000+ test days of AIN support to DIL, PEOs, PMs, PDSS, etc., to achieve sustained C4I system/software Army/Joint interoperability
- 120 Essential AIN modernization to meet requirements
- 301 AIN remote site sustainment upgrades, capital equipment improvements
- 40 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 1660

FY 1998 Planned Program:

- 1700 Provide remote external digitization connections and telecommunications services for the DIL
- 281 VMF Test Tool development, to support development, fielding and DIL certification of C4I systems
- 238 188-220 Test Tool development, to support development, fielding and DIL certification of C4I systems
- 1959 Provide AIN nationwide network sustainment and test support for 7500 test-days to achieve C4I/EW systems/software Army/Joint interoperability.
- Total 4178

FY 1999 Planned Program:

- 1719 Provide remote external digitization connections and telecommunications services for the DIL
- 281 Complete VMF Test Tool development and provide evolutionary upgrades as standards evolve
- 238 Complete 188-220 Test Tool development and provide evolutionary upgrades as standards evolve
- 2036 Provide AIN nationwide network sustainment and test support for 9000 test-days to achieve C4I/EW systems/software Army/Joint interoperability
- Total 4274

B. Project Change Summary

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY1997 Presidents Budget	1734	1715	1704	1684
Appropriated Value	1751	1660		
Adjustments to Appropriated Value	2339			
FY 1998 Pres Bud Request	4090	1660	4178	4274

Change Summary Explanation:

Funding: FY96/FY98/FY99 - Funds reprogrammed to support Force XXI digitization efforts (FY 96 +2339, FY 98 +2474, FY 99 +2590)

Project D097

Page 3 of 19 Pages

Exhibit R-2 (PE 0604805A)

992

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development			
A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Contractual Engineering Support	1807	1075	1535	1629
Government Engineering Support	350	350	414	424
Development Test and Evaluation	300	150		
Telecommunications Services	1315		1261	1261
Spare parts, upgrades test equipment	275		439	439
Product Development			529	521
Training	10	10		
Travel	33	35		
SBIR/STTR		40		
Total	4090	1660	4178	4274
B. Budget Acquisition History and Planning Information: Not applicable				

Project D097

Page 4 of 19 Pages

Exhibit R-3 (PE 0604805A)

993

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604805A Command, Control, Communications

PROJECT

D098

Systems - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D098 Tactical Radio Accessories	185	542	508	506	0	0	0	0	0	4734

A. Mission Description and Budget Item Justification: Project D098 - Tactical Radio Accessories: This project will provide for development efforts for the Combat Survivor Evader Locator System (CSEL), a joint program led by the Air Force. This program will provide service, joint, and/or composite operational recovery/rescue forces with the capability to pinpoint the location of and establish communication with downed personnel in need of extraction from hostile territories. The CSEL system will include the capability to pass data directly into the standard warfighter command, control, communications, computer, and intelligence (C4I) systems envisioned by the C4I for the Warrior Concept. The user's equipment will consist of a small hand-held unit used for geopositioning, over the horizon data communications, and two-way line of sight voice communications.

Acquisition Strategy: The joint Air Force led acquisition strategy is a research and development approach for the handheld unit, followed by a product contract award in FY98.

FY 1996 Accomplishments:

- 185 Supported Air Force Development efforts on CSEL program
- Total 185

FY 1997 Planned Program:

- 529 Support Air Force Development efforts on CSEL program
- 13 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 542

FY 1998 Planned Program:

- 508 Support Air Force Development efforts on CSEL program
- Total 508

FY 1999 Planned Program:

- 506 Support Air Force Development efforts on CSEL program
- Total 506

Project D098

Page 5 of 19 Pages

Exhibit R-2 (PE 0604805A)

994

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D098

Systems - Engineering Development

B. Project Change Summary

FY1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY1998 Pres Bud Request

FY 1996

189

191

-6

185

FY 1997

569

542

542

FY 1998

531

508

FY 1999

529

506

C. Other Program Funding SummaryARMY, OPA2 B03200, Combat Survivor Evader
Locator (CSEL)

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1999

To

1

4

1

3

4

1

4

1

2

3

4

D. Schedule ProfileCSEL Program, Milestone I
CSEL Program Milestone III

FY 1996

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1999

To

2

3

2

3

4

3

4

1

2

3

4

Project D098

Page 6 of 19 Pages

Exhibit R-2 (PE 0604805A)

995

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D282

Systems - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D282 SINGGARS-V Engineering Development	7189	6883	0	0	0	0	0	0	0	19897

A. Mission Description and Budget Item Justification: Project D282 - SINGGARS-V Engineering Development: This program provides for analysis and implementation of overall product improvements to the SINGGARS Combat Net Radio. Product improvements included are Global Positioning System (GPS) interfaces, Airborne Battlefield Combat Identification System (BCIS), Forward Error Correction (FEC) (data transmission enhancement techniques), improved data capability, weight reduction (to include an Alternate Configuration Receiver Transmitter, Battery Box and Vehicular Applique), MANPRINT (ease of operations), vehicular system re-engineering, improved electronic counter-counter measure (ECCM) performance and switched system dial-up interfacing. Program provides simplified operations, improved performance of existing capabilities, new operational capabilities and reduced life cycle costs.

Acquisition Strategy: The Alternate Configuration Receiver-Transmitter and associated items development design products may be used by competitive producers as a part of the anticipated FY 97 production competition of the SINGGARS radio.

FY 1996 Accomplishments:

- 8 Airborne BCIS Demonstration
- 2775 Initiated development effort for ITT SIP Alternate Configuration Radio
- 2730 Initiated development effort for GD SIP Alternate Configuration Radio
- 76 Program Management Support
- 100 Handheld SINGGARS Radio
- 1500 TF XXI Support
- Total 7189

FY 1997 Planned Program:

- 3225 Complete development effort for ITT SIP Alternate Configuration Radio
- 3225 Complete development effort for GD SIP Alternate Configuration Radio
- 265 Complete design verification testing/demonstrations for both ITT and GD Alternate Configuration Radio
- 168 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 6883

FY 1998 Planned Program: Project not funded in FY 98

Project D282

Page 8 of 19 Pages

Exhibit R-2 (PE 0604805A)

997

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering Development

D282

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY1998 Pres Bud Request

FY 1996

7191

7264

-75

7189

FY 1997

7031

6883

FY 1998

0

FY 1999

0

C. Other Program Funding Summary

Army, OPA2 SSN:B00500

Army, OPA2 SSN:J30500

Army, OPA2, SSN:Z16800

FY 1996

331082

12366

13705

FY 1997

293989

12102

13539

FY 1998

280925

9239

0

FY 1999

13507

0

0

FY 2000

13892

0

0

FY 2001

0

0

0

FY 2002

0

0

0

FY 2003

0

0

0

Total
Cost
Cont
Cont
ContTo
Compl
Cont
Cont
ContD. Schedule Profile

FY 1996

2 3

1

X*

Award Alternate Configuration

Development Contracts

ECP Cut In to Airborne Production

Exercise Alternate Configuration Dev

Contr Opt

* Milestone completed

FY 1997

2 3

1

X*

FY 1998

2 3

4

FY 1998

2 3

1

FY 1998

2 3

4

FY 1998

2 3

4

FY 1998

2 3

4

4

Project D282

Page 9 of 19 Pages

Exhibit R-2 (PE 0604805A)

998

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D282

Systems - Engineering Development

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering	6424	6450		
Development Test & Evaluation	765	265		
SBIR/STTR		168		
Total	7189	6883		

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SBIR/STTR							168				168
ITT Ft. Wayne, IN	SS/CPFF	Oct 94	3829	3829	3821	8	0			0	3829
GD Tallassee, FL	SS/CPFF	Dec 94	6300	6300	300	2775	3225			0	6300
ITT Ft. Wayne, IN	SS/CPFF	Jan 95	7455	7455	1500	2730	3225			0	7455
Support and Management Organizations:											
Misc.	TBD	Dec 94	1115	1115	204	911	0			0	1115
Test and Evaluation Organizations											
EPG, MD	MIPR	Jan 96	1030	1030	0	765	265			0	1030
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D282

Page 10 of 19 Pages

Exhibit R-3 (PE 0604805A)

999

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604805A Command, Control, Communications
Systems - Engineering Development

PROJECT

D485

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D485 C4I Interoperability Standardization and Certification	1892	471	3205	5078	5419	4786	4550	4405	Continuing	Continuing

A. Mission Description and Budget Item Justification C4I Interoperability Standardization and Certification: The Army Enterprise Strategy, DOD 4630.5, DODI 4630.8, C4I for the Warrior, and CJSCI 6212.01, mandate the establishment and sustainment of interoperability between Army C4I systems, and within the Army and Joint/Allied C4I communities. This includes operation of the Army board to synergize and integrate the Army's interoperability certification testing and analysis, and configuration management functions. Provide the Army focal point for the review, staffing, coordination and development of Army positions for the interface interoperability standards and specifications. Direct the integration of the Army systems' requirements and operational concepts documents with the joint standards and interface documents. Included is the Army's participation in Joint/Allied and intra-Army interoperability certification testing and the Army's representation in the Joint/Allied Configuration Management Process. This project also includes the development, configuration management of two key elements of the Army/Joint Technical Architectures - Variable Message Format and MIL-STD-188-220A standards suites, that are required for successful Force XXI and Joint Exercises. The Digital Integrated Lab (DIL) has been adopted by the Army leadership for Force XXI to evaluate system's interoperability and identify interoperability issues early on in system design to provide the material developer with opportunities to modify and adjust the system without major programmatic impacts. The DIL performs protocol conformance, interoperability and certification testing for the Army's Force XXI battlefield digitization effort; it tests equipment and identifies interoperability issues, develops interoperability assessments, certification recommendations, and test reports. The DIL facilitates engineered solutions by replicating digital battlefield environments to support Advanced Technology Demonstrations, Advanced Warfighting Experiments, and realistic evaluation of new tactics, doctrine and operational concepts. It is the fundamental component for systems engineering and integration to optimize the evolution of architectures and systems for the digital battlefield.

Acquisition Strategy: The efforts funded within this project are non-system specific, therefore no Acquisition Strategy is provided.

FY 1996 Accomplishments:

- 434 Represented Army in 12 Army/Joint configuration control boards
- 50 Maintained Army Five Year Master Test Schedule
- 300 Army participation in 11 Joint Certification Tests of 25 systems
- 200 Represented Army in 6 Joint Analysis Review Panels for 25 systems
- 626 Developed/deployed VMF Test Tool Build-1 (initial capability)
- 282 Developed/deployed 188-220 Tester Build -0.1 (initial Monitor/Decode)
- Total 1892

Project D485

Page 11 of 19 Pages

Exhibit R-2 (PE 0604805A)

1000

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering Development

D485

FY 1997 Planned Program:

- 409 Represent Army in 12 Army/Joint configuration control boards
- 50 Maintain Army Five Year Master Test Schedule
- 12 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 471

FY 1998 Planned Program:

- 1572 Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
- 1077 Army Force XXI and Joint VMF Standards Development, improvement, test and analysis
- 556 Army Force XXI and Joint 188-220A Standards Development, improvement, test and analysis
- Total 3205

FY 1999 Planned Program:

- 1755 Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
- 826 Army Force XXI and Joint VMF Standards Development, improvement, test and analysis
- 556 Army Force XXI and Joint 188-220A Standards Development, improvement, test and analysis
- 1078 TADIL & USMTF standards Army/Joint CM process
- 863 TADIL & USMTF Joint Certification Testing
- Total 5078

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 Presidents Budget	484	481	481	480
Appropriated Value	489	471		
Adjustments to Appropriated Value	1403			
FY 1998 Pres Bud Request	1892	471	3205	5078

Change Summary Explanation:

Funding: FY1996/FY1998/FY1999 - Funding reprogrammed to support Force XXI and Joint /Allied Digitization Exercises
(FY 96 +1403, FY 98 +2724, FY 99 +4598)

Project D485

Page 12 of 19 Pages

Exhibit R-2 (PE 0604805A)

1001

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development			D485
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support		170	459	1054	1923
Contractor Engineering Support		1652		2151	3155
Telecommunications Services		70			
SBIR/STTR			12		
Total		1892	471	3205	5078
B. Budget Acquisition History and Planning Information:		Not applicable			

Project D485

Page 13 of 19 Pages

Exhibit R-3 (PE 0604805A)

1002

Item 99

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997	
5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE										PROJECT		
		0604805A Command, Control, Communications Systems - Engineering Development										D488		
	COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
D488	Tactical Net Radio Communications	3384	0	0	0	0	0	0	0	0	Continuing	Continuing		
<p>A. Mission Description and Budget Item Justification : Tactical Net Radio Communications: Develops the Frequency Hopping Multiplexer (FH MUX) which allows multiple radios to operate on one antenna for reduced visual signature and rapid transportability and set-up. Performs procedural interoperability testing and provides the Army's gateway to interoperability test network for certification of Army C3I systems. Develops Wireless Network Access (WNA) to provide communications interface to CHS host computers and transmission security for tactical operations. Provide for executive agent and requirements for test and evaluation of the Joint Task Force Communications Planning and Management System.</p> <p>The Frequency Hopping Multiplexer (FH MUX) preproduction hardware fabrication was finalized in FY 96 with emphasis on models and qualification testing. In support of Task Force XXI (TF XXI) analyses will be performed to mitigate co-site interference amongst various radios and frequency allocations assigned. Support will focus on communication systems engineering of tactical radios to mitigate platform interference and provide for maximum communication ranges. The CECOM Mobile Test Van will be upgraded to provide for integration of evolving technologies. Efforts to establish an EMI/EMC co-site testbed and audio technology facility will be initiated. Applications for antenna technology will focus on developing wideband HF and VHF antennas which are structurally embedded in the airborne or ground mobile platform. Future Data Radio [FDR/Near-Term Digital Radio (NTDR)] will be added into the Digital Integrated Lab (DIL) network, for demonstration and experimentation purposes.</p> <p>Acquisition Strategy: The acquisition strategy for the FH MUX is to award a sole source contract for up to 50 FH MUX Pre-Production Qualification Test (PPQT) model units to Xetron Corporation, Cincinnati, OH, the current developer of the FH MUX. This contract was an essential preparatory phase to the planned full rate production contract awarded in 3QFY96 and provided substantial reduction in production risk.</p>														
<p>FY 1996 Accomplishments</p> <ul style="list-style-type: none"> • 552 FH MUX Preproduction Hardware Fabrication • 648 Program Management, design review, test & evaluation, data support for Pre-production Qualification Testing (PPQT) for the FHMUX • 420 Developed application of land and airborne structurally embedded antennas • 704 Integration of FDR to NTDR into DIL • 100 Initiated audio lab upgrade • 370 Initiated Co-site EMI/EMC testbed • 100 Mobile test van upgrades & equipment integration • 220 Tactical Radio integration support to TF XXI • 200 Frequency allocation & co-site analysis support to Task Force XXI • 70 Enhanced testing of interference cancellation technologies at EPG Total 3384 														
<p>Project D488</p> <p style="text-align: right;">Page 14 of 19 Pages</p> <p style="text-align: right;">Exhibit R-2 (PE 0604805A)</p>														

1003

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D488

Systems - Engineering Development

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY1997 Presidents Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

3465

3501

-117

3384

FY 1997

FY 1998

FY 1999

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, SSN BA1205	24028	35699	0	0	0	0	0	0	0	59727

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
1	2	3	4	1	2	3	4	1	2

FHMUX Production Award

Delivery FHMUX PPQ Units

FHMUX Production Award (OPTION)

Delivery FHMUX Units

* Milestone has been completed

Project D488

Page 15 of 19 Pages

Exhibit R-2 (PE 0604805A)

1004

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE	FY 1996	FY 1997
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development		
A. Project Cost Breakdown			
Contractor Engineering Support		1150	
Development Test and Evaluation		617	
Government Engineering Support		1596	
Miscellaneous		21	
Total		3384	
B. Budget Acquisition History and Planning Information: Not applicable			

Project D488

Page 16 of 19 Pages

Exhibit R-3 (PE 0604805A)

Item 99

1005

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development								D589	
COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D589	Army Systems Engineering & Warfighting Technical Support	0	0	3161	6537	7824	7909	8128	8014	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighting Technical Support: This project provides essential, multi-disciplined, highly technical, non-parochial, Army-level expertise in both System Engineering and Technical Architecture (TA) matters as directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA). The Army Technical Architecture (ATA) provides the 'building code' foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Army System Engineer's (ASE's) work efforts associated with the development and implementation of the ATA under this project are critical path elements to achieve the Army's Force XXI digitization mission, provide the ability to fight and win on tomorrow's battlefield, and assure compatibility with both Joint and Coalition Warfighters. It provides for integration of emerging technologies to support the next generation of digitization across all battlefield operating systems for the 21st century. It provides essential technical expertise and planning for integration of new technologies (ATDs, ACTDs, other services and commercial) and documentation to achieve the technical evolution to a joint interoperable architecture and to achieve rapid acquisition for fielding to Force XXI. Provides analysis and hands-on support to the warrior, by supporting development of the operational architecture and implementing new C4I Warrior information technologies.</p> <p>Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.</p> <p>FY 1996 Accomplishments: Project not funded in FY 96</p> <p>FY 1997 Planned Program: Project not funded in FY 97</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1200 Conduct major design evaluations of Army systems for ATA Interoperability Compliance • 1212 Ensure ATA Interoperability Implementation through IPT/Contract actions and assess the ATA compatibility of Army Science and Technology Programs • 432 Maintain existing ATA Information Technology Standards • 317 Technically influence the development and implementation of the Joint Command, Control, Communications and Computer Intelligence TA <p>Total 3161</p>											

Project D589

Page 17 of 19 Pages

Exhibit R-2 (PE 0604805A)

1006

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering Development

D589

FY 1999 Planned Program:

- 1978 Expand major ATA Compliance design evaluations to encompass both interoperability and standardization (SW Reuse)
- 1291 Extend coverage of IPTs/Contract Actions participation to all critical Army systems to ensure ATA Implementation
- 505 Assess ATA compatibility of all major Army S&T Programs
- 573 Investigate the maturity of emerging, complex, multi-discipline information technology standards for inclusion in the ATA
- 401 Assess suite of ATA interoperability protocols selected by the Weapons and M&S communities
- 391 Assess System ATA Implementation Schedules for Army Interoperability Synchronization
- 495 Technically influence the extension of the Joint Technical Architecture (JTA) to non-C4I systems
- 389 Technically influence commercial and international standards forums
- 514 Provide integration of new technologies for emerging systems into joint interoperable Force XXI architecture in support of Battlefield Operating Systems for the 21st century.

Total 6537

B. Project Change Summary

FY1997 Presidents Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

0

0

0

0

FY 1997

0

0

0

FY 1998

0

3161

FY 1999

0

6537

Change Summary Explanation:

Funding: FY98/FY99 Increase as a result of priority associated with support for Army Technical Architecture (FY 98 +3161, FY 99 +6537)

Project D589

Page 18 of 19 Pages

Exhibit R-2 (PE 0604805A)

1007

Item 99

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development		D589	
A. Project Cost Breakdown					
Government Engineering	FY 1996	FY 1997	FY 1998	FY 1999	
	0	0	1931	2414	
Contractual Engineering	0	0	930	3271	
Technical Studies/Technology Evaluations	0	0	0	542	
Training	0	0	90	20	
Travel	0	0	210	290	
Total			3161	6537	
B. Budget Acquisition History and Planning Information	Not applicable				

Project D589

Page 19 of 19 Pages

Exhibit R-3 (PE 0604805A)

1008

Item 99

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604807A Medical Materiel - Engineering Development

	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		4644	4693	4483	5408	6509	6369	7875	8544	Continuing	Continuing
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development		189	189	0	306	1454	1375	1815	1774	Continuing	Continuing
D832 Combat Medical Materiel-Engineering Development		1508	1659	2346	2420	2363	2329	3307	3477	Continuing	Continuing
D834 Soldier System Protection-Engineering Development		854	865	931	941	925	915	1159	1950	Continuing	Continuing
D849 Infectious Disease Drug and Vaccine-Engineering Development		2093	1980	1206	1741	1767	1750	1594	1343	Continuing	Continuing

Mission Description and Budget Item Justification: This engineering and manufacturing development program funds: (1) improved medical equipment and drugs essential to counteracting lethal and human performance degrading effects of infectious diseases, and (2) medical equipment essential to meeting medical requirements on the integrated battlefield, with emphasis on decreased size/weight and high mobility, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet Army medical defense goals. This program element supports the full-scale development of vaccines, prophylactic and therapeutic drugs, resuscitation fluids and drug products for Acquired Immune Deficiency Syndrome (AIDS). This program funds engineering and manufacturing development for both large and small Combat Casualty Care end items for location of casualty, diagnosis, rapid intensive care delivery, intensive care evacuation platforms, and rapidly mobile, lightweight surgical facilities and equipment. Additionally, the program element funds engineering and manufacturing development of medical equipment which provides protection against physiological, psychological or environmental factors which degrade physical performance. This includes engineering development of vision corrective devices for protective masks. This program is primarily managed by the U.S. Army Medical Research and Materiel Command. The projects in this program element support research efforts in the engineering and manufacturing development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

Page 1 of 15 Pages

Exhibit R-2 (PE 0604807A)

1009

Item 100

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604807A Medical Materiel - Engineering Development

PROJECT

D812

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	189	189	0	306	1454	1375	1815	1774	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant HIV medical countermeasures. This provides for engineering and manufacturing development of sufficient candidate vaccines and drugs to permit large-scale field testing and education/training materials. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment. The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD.

Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

FY 1996 Accomplishments:

- 95 Characterized cohorts for a Phase III test of a vaccine to prevent infection with HIV.
- 94 Conducted Phase I trials to evaluate vaccine products for transitioning to Phase III.
- Total 189

FY 1997 Planned Program:

- 92 Develop and prepare cohorts for a Phase III test of a vaccine to prevent infection with HIV.
- 93 Conduct additional Phase I trials and begin Phase II trials and selected products to evaluate vaccine products for transitioning to Phase III.
- 4 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 189

FY 1998 Planned Program: Project not funded in FY 98.

FY 1999 Planned Program:

- 106 Develop cohorts for Phase III trial.
- 200 Conduct Phase II trial necessary for transition of HIV vaccines to Phase III trials.
- Total 306

Project D812

Page 2 of 15 Pages

Exhibit R-2 (PE 0604807A)

1010

Item 100

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PROJECT

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604807A Medical Materiel - Engineering
Development

D812

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

193

199

-10

189

FY 1997

193

189

FY 1998

288

FY 1999

288

Change Summary Explanation: Funding: FY 1998: Funds reprogrammed (-288) to higher priority requirements.

C. Other Program Funding Summary: Not Applicable.**D. Schedule Profile:** Multiple medical developmental products will advance through the various events throughout the FY.

Project D812

Page 3 of 15 Pages

Exhibit R-2 (PE 0604807A)

1011

Item 100

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT		
BUDGET ACTIVITY										PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development										0604807A Medical Materiel - Engineering Development				
A. Project Cost Breakdown										FY 1996	FY 1997	FY 1998	FY 1999	Total Program
Test & Evaluation										189	189	0	306	
Product Development										0	0	0	0	
Project Management										0	0	0	0	
Total										189	189	0	306	
B. Budget Acquisition History and Planning Information														
Performing Organizations														
Contractor or Government										Project Office			Total	
Performing Activity										FY 1996			FY 1996	
Contract Method/Type or Funding Vehicle										FY 1997			FY 1997	
Award or Obligation Date										FY 1998			FY 1998	
Performing Activity										FY 1999			FY 1999	
Product Development Organizations: None														
Support and Management Organizations														
USAMMDA										0			0	
Contracts										0			0	
Test and Evaluation Organizations														
Army Laboratories										0			0	
Contracts										0			0	
H.M. Jackson Foundation										189			189	
C/Coop Agreement										125000			125000	
Government Furnished Property: None.										38042			38042	
Subtotal Product Development														
Subtotal Support and Management										38042			38042	
Subtotal Test and Evaluation										189			189	
Total Project										306			306	
Project D812													38726	
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Project D812

Page 4 of 15 Pages

Exhibit R-3 (PE 0604807A)

1012

Item 100

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604807A Medical Materiel - Engineering Development

PROJECT

D832

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D832 Combat Medical Materiel-Engineering Development	1508	1659	2346	2420	2363	2329	3307	3477	Continuing	Continuing

A. Mission Description and Justification: This project supports engineering and manufacturing development to field new and improved medical materiel essential for combat casualty care to reduce logistical support requirements and minimize loss from duty rates. The major contractor is the United Defense Limited Partnership, San Jose, CA.

Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.

FY 1996 Accomplishments:

- 117 Reviewed commercial progress of Hypertonic Saline Dextrane with FDA.
- 775 Fabricated armored ambulance prototype and prepared specifications.
- 283 Supported the engineering development and user evaluation of telemedicine hardware and concepts for the treatment of combat casualties.
- 333 Conducted technical and user evaluations of the intraosseous infusion device.
- Total 1508

FY 1997 Planned Program:

- 83 Transition Hypertonic Saline Dextran to procurement.
- 286 Conduct technical and user evaluations of Engineering Design Model of armored treatment vehicle.
- 1250 Support the engineering development and user evaluations of telemedicine hardware and concepts for the treatment of combat casualties.
- 40 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 1659

Project D832

Page 5 of 15 Pages

Exhibit R-2 (PE 0604807A)

1013

Item 100

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

D832

FY 1998 Planned Program:

- 464 Continue development and technical testing of the portable field oxygen concentrator.
- 200 Patient Movement Item Testing at Military Laboratories.
- 763 ATTV medical integration costs onto C2V platform, IOT&E.
- 275 NDI User Testing of Medical Equipment.
- 350 AZTEC Advanced Technology Demonstration Quantico and Fort Bragg.
- 294 Limited User Assessment Testing LSTAT.
- Total 2346

FY 1999 Planned Program:

- 222 Complete development; secure air worthiness certification of the portable field oxygen concentrator.
- 910 Conduct user testing and integration of the Armored Treatment Vehicle.
- 812 Conduct operational testing and begin Low Rate Initial Production of MEDITAG.
- 476 Begin IOT& E testing LSTAT.
- Total 2420

B. Project Change Summary

FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999
Appropriated Value	1546	1695	1736	1852
Adjustments to Appropriated Value	1590	1659		
FY 1998 Pres Bud Request	-82			
	1508	1659	2346	2420

Change Summary Explanation:

Funding: FY98: Funds reprogrammed (610) into this project for the ATV.
 FY99: Funds reprogrammed (568) into this project for the ATV.

C. Other Program Funding Summary: Not Applicable.

Project D832

Page 6 of 15 Pages

Exhibit R-2 (PE 0604807A)

1014

Item 100

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1997	PROJECT D832
BUDGET ACTIVITY	PE NUMBER AND TITLE							
5 - Engineering and Manufacturing Development	0604807A Medical Materiel - Engineering Development							
D. Schedule Profile: Multiple medical developmental products will advance through the various events throughout the FY								
	FY 1996	FY 1997	FY 1998	FY 1999				
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4				
Field Medical Oxygen Generation and Distribution System MLST 3			X					
Intraosseous Infusion Device MLST 3		X						
Hypertonic Saline Dextran MLST 3								
Field Anesthesia Machine MLST 1								
MLST 2								
Life Support Trauma and Transport System								
MLST 2								
MLST 3								
Armored Transport and Treatment Vehicle								
MLST 1/2								
MLST 3								

Page 7 of 15 Pages

Exhibit R-2 (PE 0604807A)

1015

Item 100

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering

Development

D832

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation	615	1334	607	626
Product Development	690	61	1407	1064
Program Management	203	264	332	730
Total	1508	1659	2346	2420

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						690	61	1407	1062	Cont	3220
Support and Management Organizations											
USAMMDA						94	176	291	227	Cont	788
Contracts						109	88	41	505	Cont	743
Test and Evaluation Organizations											
Army Laboratories						615	1334	607	626	Cont	3182

Government Furnished Property: None

Subtotal Product Development
 Subtotal Support and Management
 Subtotal Test and Evaluation
 Total Project

690	61	1407	1062
203	264	332	732
615	1334	607	626
1508	1659	2346	2420

3220
1531
3182
7933

Project D832

Page 8 of 15 Pages

Exhibit R-3 (PE 0604807A)

1016

Item 100

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering

D834

Development

COST (in Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D834	Soldier System Protection-Engineering Development	854	865	931	941	925	915	1159	1950	Continuing	Continuing

A. Mission Description and Justification: This project supports engineering development of preventive medicine materiel, including devices, pharmacologicals and other tools, to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures. A major contractor is Stanford Research Institute, Palo Alto, CA.

Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.

FY 1996 Accomplishments:

- 854 Supported the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
- Total 854

FY 1997 Planned Program:

- 844 Support the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
- 21 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 865

FY 1998 Planned Program:

- 931 Conduct trials to evaluate safety and efficacy of performance enhancing drugs.
- Total 931

FY 1999 Planned Program:

- 941 Complete safety and efficacy trials of performance enhancing drugs; prepare regulatory filings.
- Total 941

Project D834

Page 9 of 15 Pages

Exhibit R-2 (PE 0604807A)

1017

Item 100

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604807A Medical Materiel - Engineering Development	D834	
B. Project Change Summary			
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998
Appropriated Value	876	884	919
Adjustments to Appropriated Value	901	865	
FY 1998 Pres Bud Request	-47		
	854	865	931
			941
C. Other Program Funding Summary: Not Applicable.			
D. Schedule Profile: Multiple medical developmental products will advance through the various events throughout the FY.			
Project D834		Exhibit R-2 (PE 0604807A)	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D834

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering
DevelopmentA. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	0	44	897	711
Product Development	834	817	0	0
Project Management	20	4	34	230
Total	854	865	931	941

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contracts						834	817	0	0	Cont	1651
Support and Management Organizations						20	4	34	51	Cont	109
USAMMDA						0	0	0	179		179
Test and Evaluation Organizations:						0	44	897	711	Cont	1652
Army Labs											

Government Furnished Property: None

Subtotal Product Development	834	817			1651
Subtotal Support and Management	20	4	34	230	288
Subtotal Test and Evaluation		44	897	711	1652
Total Project	854	865	931	941	3591

Project D834

Page 11 of 15 Pages

Exhibit R-3 (PE 0604807A)

1019

Item 100

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604807A Medical Materiel - Engineering Development

PROJECT

D849

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D849 Infectious Disease Drug and Vaccine-Engineering Development	2093	1980	1206	1741	1767	1750	1594	1343	Continuing	Continuing

A. Mission Description and Justification: This project funds engineering and manufacturing development of sufficient candidate medical countermeasures to permit large-scale field testing and complete studies required for FDA licensure. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial and parasitic diseases, so as to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations.

Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government managed trials to meet FDA requirements.

FY 1996 Accomplishments:

- 440 Completed Phase III trials for the whole cell cholera vaccine.
- 592 Initiated field trials of Enterotoxigenic *E. coli* whole cell live vaccine.
- 911 Conducted safety and efficacy tests of the antimalarial drug Azithromycin.
- 150 Completed contingency protocol for vaccination of troops in Bosnia with tick-borne encephalitis (TBE).
- Total 2093

FY 1997 Planned Program:

- 283 Prepare License Application for Argentine Hemorrhagic Fever Vaccine.
- 947 Complete safety and efficacy testing of antimalarial drug Azithromycin.
- 273 Conduct Phase II efficacy study for *Campylobacter* vaccine.
- 281 Continue efficacy trial on ETEC vaccine.
- 147 Initiate Phase I safety study for TBE vaccine.
- 49 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
- Total 1980

Project D849

Page 12 of 15 Pages

Exhibit R-2 (PE 0604807A)

1020

Item 100

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

D849

FY 1998 Planned Program:

- 359 Continue trials required to accumulate data to support FDA regulatory filings for *Campylobacter*, ETEC and tick-borne encephalitis vaccines.
- 250 Continue extended Phase II trials for *Shigella flexneri* 602.
- 150 Prepare New Drug Application (NDA) for antimalarial drug Azithromycin.
- 447 Continue field trials to evaluate efficacy of antimalarial drugs WR238605 and Halofantrine.
- Total 1206

FY 1999 Planned Program:

- 423 Complete expanded field trials proving the efficacy of *Campylobacter*, ETEC and vaccinia-vectored Hantaan M-S vaccines.
- 30 Support manufacturer's FDA regulatory filing for licensure of tick-borne encephalitis vaccine.
- 661 Conduct expanded field trials to prove efficacy of *Shigella flexneri* 602, detoxified LPS-OMP meningitis group B, multivalent Dengue vaccines and a *Leishmania* skin test antigen.
- 116 Field antimalarial drug Azithromycin.
- 511 Conduct full scale expanded field trials to evaluate efficacy of antimalarial drugs WR238605 and Halofantrine.
- Total 1741

B. Project Change Summary

FY 1997 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	2022	2053	2031
Adjustments to Appropriated Value	2048	1980	
FY 1998 Pres Bud Request	45		
	2093	1206	1741

Change Summary Explanation:

Funding: FY 1998: Funds reprogrammed (-847) to higher priority programs.
 FY 1999: Funds reprogrammed (-290) to higher priority programs.

C. Other Program Funding Summary: Not Applicable.

Project D849

Page 13 of 15 Pages

Exhibit R-2 (PE 0604807A)

1021

Item 100

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997	
BUDGET ACTIVITY		PROJECT		
5 - Engineering and Manufacturing Development		D849		
PE NUMBER AND TITLE		0604807A Medical Materiel - Engineering Development		
<p>D. Schedule Profile: Multiple medical developmental products will advance through the various events throughout the FY</p>				
		FY 1996	FY 1997	FY 1998
		1 2 3 4	1 2 3 4	1 2 3 4
ETEC MLST 3				
TBE MLST 3				
Azithromycin MLST 3				
Argentine Hemorrhagic Fever Vaccine				
MS3				

Project D849

Page 14 of 15 Pages

Exhibit R-2 (PE 0604807A)

1022

Item 100

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering

D849

Development

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999	
Test & Evaluation	1701	1442	911	433	
Product Development	55	0	0	0	
Project Management	337	538	295	1308	
Total	2093	1980	1206	1741	

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Contracts						55	0	0	0	Cont	55
<u>Support and Management Organizations</u>											
USAMMDA											
Contracts						280	374	195	310	Cont	1159
<u>Test and Evaluation Organizations</u>											
Army Laboratories						57	164	100	123	Cont	444
Walter Reed Army Inst of Research						442	313	215	318	Cont	1288
Contracts						1069	509	296	480	Cont	2354
Navy Laboratories						0	0	0	0	Cont	
Contracts						190	620	400	510	Cont	1720
<u>Government Furnished Property: None</u>											
Subtotal Product Development						55					55
Subtotal Support and Management						337	538	295	433		1603
Subtotal Test and Evaluation						1701	1442	911	1308		5362
Total Project						2093	1980	1206	1741		7020

Project D849

Page 15 of 15 Pages

Exhibit R-3 (PE 0604807A)

1023

Item 100

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604808A Landmine Warfare/Barrier - Engineering Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6802	7556	22605	44133	41782	27530	25691	35593	Continuing	Continuing
D016 Mine Systems Engineering Development	4968	5384	0	0	0	11255	11960	21786	Continuing	Continuing
D415 Mine Neutralization/Detection	1834	2172	22605	44133	41782	16275	13731	13807	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for engineering and manufacturing development of mine and countermine systems. Project D016, Mine Systems Engineering Development, provides for the increased tactical effectiveness and responsiveness of landmines by supporting the development of a minefield command and control system for the Wide Area Munition (WAM) and improved sensors that increase countermeasure resistance of Volcano mines which can be dispensed rapidly from helicopters, ground dispensers, artillery systems and tactical aircraft. Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), and Handheld Stand-off Minefield Detection System (HSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan. This program element supports Engineering and Manufacturing Development (EMD) and is, therefore, appropriately placed in Budget Activity 5.

NOTE: For FY1999 and FY2000, **Project D016** should be ZERO as reflected above and **Project D415** should be increased by \$3.6M in FY1999 and by \$4.0M in FY2000 as reflected above. These increases were inadvertently placed in the wrong project, but do not impact the PE total. The Army database will be corrected at the next opportunity.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

D016

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D016 Mine Systems Engineering Development	4968	5384	0	0	0	11255	11960	21786	Continuing	Continuing

A. Mission Description and Justification: Provides for engineering and manufacturing development of scatterable mines and new smart munitions.

Acquisition Strategy: A command and control capability is being developed as a product improvement to Wide Area Munition (WAM) and will be incorporated into the WAM product improvement program.

FY 1996 Accomplishments:

- 660 Completed Preliminary System Safety Design
- 1000 Conducted C2 System Design effort
- 1808 Completed Communication Network Preliminary Design
- 1500 Conducted Application Specific Integrated Circuit (ASIC) Design
- Total 4968

FY 1997 Planned Program:

- 1950 Receiver/Transmitter critical circuit design
- 784 Complete ASIC design
- 910 Build brassboard Receiver/Transmitter
- 1609 Control Station Interface electronics design
- 131 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 5384

FY 1998 Planned Program: Program not funded

FY 1999 Planned Program: Program not funded

Project D016

Page 2 of 8 Pages

Exhibit R-2 (PE 0604808A)

1025

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

D016

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustment to appropriated value

FY 1998 Pres Bud request

FY 1996

5096

5392

-424

4968

FY 1997

5499

5384

5384

FY 1998

0

0

FY 1999

0

0

C. Other Program Funding Summary

RDTE, A Budget Activity 4

PE 0603619A, Project D005, Landmine Adv Dev

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
			3767	4258	4241					12270

D. Schedule Profile

1

FY 1996

2

FY 1996

3

FY 1997

4

FY 1997

1

FY 1998

2

FY 1998

3

FY 1999

4

FY 1999

3

FY 1999

2

FY 1999

1

FY 1999

4

Complete WAM C2 Circuit Design

Complete WAM System Network Control

Electronics Design

Complete Radio Brassboard Design

Integrate, assemble and test complete

software development

Qualify WAM C2 Prototype

*Milestone Complete

Project D016

Page 3 of 8 Pages

Exhibit R-2 (PE 0604808A)

1026

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1997
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604808A Landmine Warfare/Barrier - Engineering D016		
Development			
A. <u>Project Cost Breakdown</u>	FY 1996	FY 1997	FY 1998
Hardware Development	4098	4328	
Test & Evaluation	270	275	
Government Engineering & Support	450	475	
Government Program Support	150	175	
SBIR/STTR		131	
Total	4968	5384	
B. <u>Budget Acquisition History and Planning Information</u> Not Applicable			

Project D016

Page 4 of 8 Pages

Exhibit R-3 (PE 0604808A)

Item 101

1027

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development D415

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D415 Mine Neutralization/Detection	1834	2172	22605	44133	41782	16275	13731	13807	Continuing	Continuing

A. Mission Description and Justification: This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), Handheld Stand-off Minefield Detection System (HSTAMIDS), and Interim Vehicle Mounted Mine Detector (IVMMD). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan.

Acquisition Strategy: ASTAMIDS and IVMMD - Sole source production contract awarded to competitively competed development contractor; ESMB - Competitively competed development contract followed by competitively competed production contract.

FY 1996 Accomplishments:

- 1147 Awarded Contract and Procured Test Hardware for Interim IVMMD.
- 687 Conducted Test and Evaluation for IVMMD.
- Total 1834

FY 1997 Planned Program:

- 100 Conduct Milestone II Review for ASTAMIDS.
- 1569 Conduct Source Selection and Initiate Engineering Development Design for ASTAMIDS.
- 450 Conduct Milestone II review for IVMMD
- 53 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2172

FY 1998 Planned Program:

- 1300 Conduct Milestone II review, prepare solicitation, source selection, and award EMD contract for ESMB.
- 2100 Build hardware and conduct contractor testing for ESMB.
- 5332 Initiate engineering, development, design for ESMB.
- 11132 Complete ASTAMIDS EMD design.
- 2641 Initiate ASTAMIDS system fabrication/integration.
- 100 Initiate IOT&E and PQT planning for ASTAMIDS.
- Total 22605

Project D415

Page 5 of 8 Pages

Exhibit R-2 (PE 0604808A)

1028

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

D415

FY 1999 Planned Program:

- 8662 Continue ESMB engineering, development, and design.
- 8000 Build ESMB hardware and conduct contractor testing.
- 350 Conduct ESMB configuration design review (CDR).
- 18200 Complete ASTAMIDS fabrication/integration of test hardware.
- 800 Complete PQT, and IOT&E for ASTAMIDS
- 7315 Conduct HSTAMIDS source selection and initiate EMD.
- 806 Procure HSTAMIDS long lead test hardware.
- Total 44133

B. Project Change Summary

FY 97 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 98 Pres Bud Request

	FY 1996	FY 1997	FY 1998	FY 1999
	1881	14232	22866	36637
	1990	2172		
	-156			
	1834	2172	22605	44133

Change Summary Explanation:

Funding: FY 97 transfer of \$12M by direction of Congress to 0603619A D606 to continue DEM/VAL, conduct evaluation of alternative technologies and delay start of EMD for ASTAMIDS.

FY99 increase of \$3.9M in accordance with restructured EMD phase for ASTAMIDS and \$3.6M to accelerate HSTAMIDS.

Schedule: Milestone II IPR for ASTAMIDS delayed until 4Q97. Milestone III for ASTAMIDS rescheduled for 4Q00.

C. Other Program Funding Summary

RDTE, A Budget Activity 4

PE 0603619A, Project D606, Countermine/Barrier

Advanced Development

OPA 3, A Appropriation

M80101, IVMMMD

S11500, ASTAMIDS

M80300, ESMB

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	35768	27860	15115	6956	6368	17564	8600	9800	Cont	Cont
			6400	4333	3992					14725
						11144	12003	12059	Cont	Cont
						3413	7413	7417	Cont	Cont

Project D415

Page 6 of 8 Pages

Exhibit R-2 (PE 0604808A)

1029

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT

D415

D. Schedule Profile

D. Schedule Profile															
	FY 1996				FY 1997			FY 1998			FY 1999				
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Award Contract and Procure Test Hardware for IVMMD															
Conduct Test and Evaluation for IVMMD															
Conduct Milestone III Review IVMMD															
Conduct Milestone II Review for ASTAMIDS															
Conduct Source Selection and Initiate Engineering Development Design for ASTAMIDS															
Complete ASTAMIDS EMD Design															
Conduct Milestone II for ESMB															
Conduct ESMB Design Review															
Conduct Milestone II for HSTAMIDS															
Award HSTAMIDS EMD Contract															

*Milestone Complete

Project D415

Page 7 of 8 Pages

Exhibit R-2 (PE 0604808A)

1030

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT D415

A. Project Cost Breakdown														
Primary Hardware Development	FY 1996	FY 1997	FY 1998	FY 1999										
Test and Evaluation	1097	1119	16305	36933										
Government Engineering and Support	190		1600	1420										
Government Program Management	447	800	4300	5080										
SBIR/STTR	100	200	400	700										
Total	1834	2172	22605	44133										
B. Budget Acquisition History and Planning Information														
Performing Organizations														
Contractor or														
Government	Method/Type	Award or	Performing	Project	Total									
Performing	or Funding	Obligation	Activity	Office	Prior to									
Activity	Vehicle	Date	EAC	EAC	FY 1996									
Product Development Organizations														
TBD	TBD	TBD												
Misc.	Various	Various												
SBIR/STTR														
Support and Management Organizations														
NVESD/CECOM	Various													
Misc.	Various													
Test and Evaluation Organizations														
TECOM	Various													
Misc.	Various													
Government Furnished Property: None														
Subtotal Product Development														
Subtotal Support and Management														
Subtotal Test and Evaluation														
Total Project														

Project D415

Page 8 of 8 Pages

Exhibit R-3 (PE 0604808A)

1031

Item 101

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604814A Sense and Destroy Armor Munition - Engineering Development									
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		15764	9934	22372	20813	12873	1960	0	0	0	1004761
D2ST SADARM Operational Test		0	300	5494	0	0	0	0	0	0	5794
D644 Generic SADARM Engineering Development		15764	9634	16878	20813	12873	1960	0	0	0	998967

Mission Description and Budget Item Justification: Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitzer delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.

These capabilities will be enhanced by the SADARM Product Improvement (PI) program which begins in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the baseline SADARM), improved infrared sensor to see targets at higher altitudes, and a combined effects (multi-frag) warhead permitting it to kill more targets. As a result, the PI SADARM will be more effective against its primary target (self-propelled howitzers) and secondary targets (light and heavy missile launchers, surface-to-air missile sites, air defense units, surface-to-surface missiles and towed howitzers). When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area (approximately 53,000 square meters or 12 football fields). The submunition detects and destroys the target with the new combined effects warhead.

The projects within this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604814A Sense and Destroy Armor Munition -
Engineering Development

D2ST

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2ST SADARM Operational Test	0	300	5494	0	0	0	0	0	0	5794

A. Mission Description and Justification: This project finances the direct costs of planning and conducting operational test and evaluation of the Sense and Destroy Armor (SADARM) munitions by the Operational Test and Evaluation Command (OTPEC). SADARM is an Acquisition Category (ACAT) IC system with an Initial Operational Test and Evaluation (IOTE) in FY 1998. Operational testing is conducted under conditions that approximate, as closely as possible, those encountered in actual combat with typical user troops trained to employ the system. OTPEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system. Project D2ST is restructured from SSN E66300, Projectile, Artillery, 155mm SADARM, M898, Procurement Ammunition, Army, and is not a new start.

FY 1996 Accomplishments : Project not funded in FY 96

FY 1997 Planned Program:

- 293 Planning and preparation for test during the 3QFY98 IOTE
- 7 Small Business Innovation Research (SBIR) Program
- Total 300

FY 1998 Planned Program:

- 5494 IOTE 3QFY98
- Total 5494

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
0	309	5575	0
	300		
0	300	5494	0

C. Other Program Funding Summary: None

Project D2ST

Page 2 of 9 Pages

Exhibit R-2 (PE 0604814A)

1033

Item 102

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604814A Sense and Destroy Armor Munition -
Engineering Development**

**PROJECT
D2ST**

D. Schedule Profile

1	FY 1996
2	
3	

1 X
4

FY 1997	2	3
---------	---	---

41

FY 1998	2	3
---------	---	---

2 FY 1999 3

Initiate preparation for 3Q FY 1998 IOTE IOTE

X

Project D2ST

Page 3 of 9 Pages

Exhibit R-2 (PE 0604814A)

1034

Item 102

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604814A Sense and Destroy Armor Munition -
Engineering Development

D2ST

A. Project Cost Breakdown

Operational Test and Evaluation

SBIR

Total

FY 1996

0

FY 1997

293

7

FY 1998

5494

FY 1999

0

5494

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing Activity

Method/Type or Funding Vehicle

Award or Obligation Date

Performing Activity EAC

Project Office EAC

Total Prior to FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Product Development Organizations: None

Support and Management Organizations: None

Test and Evaluation Organizations

OPTEC, Alex, VA

SBIR

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D2ST

Page 4 of 9 Pages

Exhibit R-3 (PE 0604814A)

1035

Item 102

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604814A Sense and Destroy Armor Munition - Engineering Development								D644	
	COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D644	Generic SADARM Engineering Development	15764	9634	16878	20813	12873	1960	0	0	0	998967
<p>A. Mission Description and Justification: Sense and Destroy Armor (SADARM)</p> <p>Acquisition Strategy - R&D: The cost plus incentive fee (CPIF) contracts were awarded in FY 1986 to Aerojet Electrosystems and Honeywell. In FY 1991, a design select eliminated the Honeywell competition. Aerojet then selected Honeywell (now Alliant Techsystems) as their prime sub-contractor and have continued this relationship into production. The Engineering and Manufacturing Development contract with Aerojet has been completed. Starting in FY 1997, a contract will be awarded for a product improvement to the basic SADARM. This effort will focus on expanding the lethal search area of the submunition and improving its ability to kill targets.</p> <p>Production: A four-year low rate production (LRP) program was initiated in FY 1995. Two contract awards are planned, each with subsequent annual options.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 1900 Conducted 155mm performance testing • 8350 Producibility efforts/testing • 5514 Transited to production efforts Total 15764 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 640 Hardware in-the-loop support • 1750 Initial/design planning for combined effects warhead • 4000 Trade studies and test for electronics sensor/software • 850 Test hardware • 2167 Government support and development of initial test criteria/schedules/plans • 227 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs Total 9634 											

Project D644

Page 5 of 9 Pages

Exhibit R-2 (PE 0604814A)

1036

Item 102

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

D644

**0604814A Sense and Destroy Armor Munition -
Engineering Development**

FY 1998 Planned Program:

- | | | |
|-------|-------|--|
| • | 600 | Hardware in-the-loop support |
| • | 2050 | Design of the combined effects warhead |
| • | 9200 | Electronic sensor software development |
| • | 1650 | Test hardware |
| • | 3378 | Government support to development |
| Total | 16878 | |

FY 1999 Planned Program:

- | | | |
|---|-------|--|
| • | 750 | Hardware in-the-loop support |
| • | 3400 | Design of the combined effects warhead |
| • | 8800 | Electronic sensor software development |
| • | 4000 | Test hardware |
| • | 3863 | Government support to development |
| | 20813 | Total |

B. Project Change Summary

**FY 1997 President's Budget Request
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request**

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
16164	9840	17000	21000
16617	9634		
-853			
15764	9634	16878	20813

C. Other Program Funding Summary

Procurement, Ammunition, Army, SSN E66300	41103	<u>FY 1996</u>
Proj, Arty, 155mm SADARM, M898		
LRIP Quantities		150

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To	Total
41103	93671	67909	77572	84335	83724	89597	99699	Compl	Cost
								1738558	2383992
150	600	507							

Project D644

Page 6 of 9 Pages

Exhibit R-2 (PE 0604814A)

1037

Item 102

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604814A Sense and Destroy Armor Munition -
Engineering Development**

PROJECT

D644

D. Schedule Profile		FY 1996			FY 1997			FY 1998			FY 1999				
1		2	3	4	1	2	3	4	1	2	3	4	1	2	3
		X*													
Final verification tests															
Award option to first LRP contract															
Award second LRP contract															
Conduct Initial Production Test (IPT)															
Award Product Improvement Contract															
ASARC III															
PI SADARM Captive Flight Test															
IOTE: 3Q FY 1998															
MSIII: 1Q FY 1999															
Award Full Scale Prod: 2Q FY 1999															
EUE: 1Q FY 1999															

* Denotes completed milestone

Project D644

Page 7 of 9 Pages

Exhibit R-2 (PE 0604814A)

1038

Item 102

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

PROJECT

0604814A Sense and Destroy Armor Munition -
Engineering Development

D644

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	11572	7240	13500	16950
Government Engineering Support	1630	1767	2799	2702
Program Management Support	635	250	250	250
Developmental Test and Evaluation	1927	150	329	911
SBIR/STTR		227		
Total	15764	9634	16878	20813

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	---	--------------------------	-------------------------	--------------------	------------------------	---------	---------	---------	---------	--------------------	---------------

Product Development Organizations

Prod Improv:- Aerojet- Azusa, CA	SS/CPAF	FEB 97	TBD	TBD	0	0	6600	12900	16200	11200	46900
Aerojet-Azusa, CA	C/CPIF	SEP 86	436202	442460	424630	11572				0	436202
ARDEC-Picatinny	C/CPIF	SEP 86	TBD	188714	59403	1065	640	600	750	800	63258
Alliant Tech Sys Hopkins, MN	SS/CPIF	SEP 88	TBD	90535	188038	0	0	0	0	0	188038
Loral Vought Sys Dallas, TX	Multiple	Multiple	TBD	7645	90535	0	0	0	0	0	90535
Miscellaneous Support and Management Organizations	Multiple	Multiple				0	0	0	0	0	7645
Prod Improv: ARDEC											0
PM SADARM							250	250	250	350	1100
Picatinny Arsenal					12245	1630	1767	2699	2202	2116	22659

Project D644

Page 8 of 9 Pages

Exhibit R-3 (PE 0604814A)

1039

Item 102

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE							
5 - Engineering and Manufacturing Development					0604814A Sense and Destroy Armor Munition - Engineering Development							
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total		FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
					FY 1996	Prior to FY 1996						
PMO-MLRS, Huntsville, AL					8368	16266				0	16266	
Miscellaneous SBIR/STTR							227			0	8868 227	
Test and Evaluation Organizations												
YPG, Yuma, AZ					20352	765	40	329	911	367	22764	
WSMR					26487					0	26487	
New Mexico					67076	232	110	100	500	0	68018	
Miscellaneous												
Government Furnished Property: None												
Subtotal Product Development					770251	12637	7240	13500	16950	12000	832578	
Subtotal Support and Management					36879	2130	2244	2949	2452	2466	49120	
Subtotal Test and Evaluation					113915	997	150	429	1411	367	117269	
Total Project					921045	15764	9634	16878	20813	14833	998967	

Project D644

Page 9 of 9 Pages

Exhibit R-3 (PE 0604814A)

Project D644

Page 9 of 9 Pages

Exhibit R-3 (PE 0604814A)

1040

Item 102

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604816A Longbow

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21969	10644	0	0	0	0	0	0	0	575057
DC31 Longbow - Apache	8782	4895	0	0	0	0	0	0	0	556121
DC87 Longbow - Apache TESS	13187	5749	0	0	0	0	0	0	0	18936

Mission Description and Budget Item Justification: Longbow will provide the AH-64 with a fire-and-forget Hellfire capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable by day or night, in adverse weather, and in countermeasures environments. Project DC31 includes the efforts necessary to synchronize the integration of the Fire Control Radar (FCR) and the Radio Frequency (RF) missile onto the Apache aircraft. It includes two versions of the Longbow Apache AH-64D series aircraft: (1) the AH-64D with the FCR mission kit plus the upgraded 701C engine, and (2) the AH-64D without the FCR mission kit and engine upgrade. Funds were added to Project DC31 in FY97 for Second Generation Forward Looking Infrared (FLIR). Project DC87 provides funding for the Longbow Apache Tactical Engagement Simulation System (TESS). The TESS will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The projects in this Program Element support research efforts started in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604816A Longbow								DC31	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC31	Longbow - Apache	8782	4895	0	0	0	0	0	0	0	556121
<p>A. Mission Description and Justification The Longbow program encompasses modifications to the AH-64 Apache as well as upgrades to the aircraft systems for the AH-64D series to efficiently and effectively integrate the FCR and RF missile. The system provides an adverse weather fire-and-forget missile capability that increases the AH-64 lethality and survivability. The Longbow Apache also retains the capability to fire the Semi-Active Laser Hellfire. The greatly improved design increases the operational capability of the crew and provides increased lethality and survivability, while complying with Congressional direction to standardize the fleet to a common configuration.</p> <p>Acquisition Strategy: The acquisition strategy involves a sole source contract during the Engineering and Manufacturing Development phase leading to a production contract in FY 96.</p> <p>FY 1996 Accomplishments:</p> <ul style="list-style-type: none"> • 6416 McDonnell Douglas Helicopter Systems (MDHS) Prime Contract • 1236 Longbow Limited Liability Corporation Contract Blade Position Indicator System (BPIS) • 492 In-house support • 638 Optical Relay Tube (ORT) Handgrip Modification Total 8782 <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> • 4775 Second Generation FLIR (Forward Looking Infrared) • 120 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs Total 4895 <p>FY 1998 Planned Program: Project not funded in FY 98</p> <p>FY 1999 Planned Program: Project not funded in FY 99</p>											

Project DC31

Page 2 of 9 Pages

Exhibit R-2 (PE 0604816A)

1042

Item 103

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604816A Longbow

DC31

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
--	----------------	----------------	----------------	----------------

8006 0 0 0

9261 4895

-479

8782	4895	0	0
------	------	---	---

e for 2nd Generation FLIR.

Total

Cost
6195739

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

S04816A Longbow

DC31

Exhibit R-3 (PE 0604816A)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604816A Longbow

PROJECT

DC31

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
PATS Contractors	Varies	Quarterly	EAC	EAC	6903		120			0	6903
SBIR/STTR										0	120
Test and Evaluation Organizations											
Test Activities	Varies	Quarterly			4114					0	4114
FLIR Testing	Aviation Tech Test Center (Ft. Rucker)						775			0	775
Government Furnished Property Not applicable											
Subtotal Product Development					456401	8290	4000				468691
Subtotal Support and Management					81929	492	120				82541
Subtotal Test and Evaluation					4114		775				4889
Total Project					542444	8782	4895				556121

Project DC31

Page 5 of 9 Pages

Exhibit R-3 (PE 0604816A)

1045

Item 103

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604816A Longbow

PROJECT

DC87

COST (In Thousands)

DC87 Longbow - Apache TESS

FY 1996
ActualFY 1997
EstimateFY 1998
EstimateFY 1999
EstimateFY 2000
EstimateFY 2001
EstimateFY 2002
EstimateFY 2003
EstimateCost to
Complete

Total Cost

13187

5749

0

0

0

0

0

0

18936

A. Mission Description and Justification: The Tactical Engagement Simulation System (TESS) will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The TESS consists of an "A" kit and a "B" kit.

Acquisition Strategy: The Apache Attack Helicopter Project Manager's Office will contract with McDonnell Douglas Helicopter Systems to do the provisioning for the "A" kit that consists of on-board software for data interface operator control software, wiring, and power source taps for the "B" kit.

FY 1996 Accomplishments:

- 7164 Development, fabrication, and integration of the TESS "A" kit and "B" kit
- 3084 Development, fabrication, and integration to upgrade Combat Training Centers (CTCs)
- 1989 Continued development of the Longbow Crew Trainer
- 950 Fire Control Radar Engineering Support
- Total 13187

FY 1997 Planned Program:

- 4608 Complete integration of the TESS "A" and "B" kits
- 1000 Complete integration of the CTC interface
- 141 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 5749

FY 1998 Planned Program: Project not funded in FY 98**FY 1999 Planned Program:** Project not funded in FY 99**B. Project Change Summary**

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 BES/Pres Bud Request

FY 1996

13937

14329

-1142

13187

FY 1997

5872

5749

5749

FY 1998

0

0

0

FY 1999

0

0

0

Project DC87

Page 6 of 9 Pages

Exhibit R-2 (PE 0604816A)

1046

Item 103

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604816A Longbow

PROJECT

DC87

C. Other Program Funding Summary

Longbow Apache TESS (AA6607)*

[illegible]

*This procurement funding represents only the portion of this line to be used for the TESS effort. The total procurement line (AA6607) includes additional funding for all other Longbow Apache efforts.

D. Schedule Profile

1	2	3	X*
FY 1996			

FY 1997
2 3

FY 1998	3
2	

FY 1999	3
2	

Initiated TESS "A" & "B" kits development,
fabrication and integration
Continue TESS "A" & "B" kits integration
Longbow Crew Trainer
Complete TESS "A" & "B" kits integration

X

X

*Denotes completed activity.

Project DC87

Page 7 of 9 Pages

Exhibit R-2 (PE 0604816A)

1047

Item 103

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1997	PROJECT		
BUDGET ACTIVITY										PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development										0604816A Longbow				
A. Project Cost Breakdown														
Contractor Engineering and Development										FY 1996	FY 1997	FY 1998	FY 1999	
Longbow Crew Trainer Development										11198	5608			
SBIR/STTR										1989	0			
Total										13187	141			
B. Budget Acquisition History and Planning Information														
Performing Organizations														
Contractor or Government	Contract	Method/Type	Award or	Performing	Activity	Project	Total							
Performing Activity	or Funding Vehicle	Obligation Date	Activity	EAC	Office EAC	Prior to FY 1996								
Product Development Organizations														
McDonnell Douglas							0	7903	3626			0	0	11529
Helicopter System														
Lockheed Martin								2728						2728
Electro Optics														
Systems								907						907
Intercostal														
Electronics														
Support and Management Organizations:														
STRICOM							0	343					0	343
CECOM							0	356	500				0	856
Longbow Limited Liability Corp.							0	950	400				0	1350
In House Support							0	0	668				0	668
SBIR/STTR									141				0	141
Test and Evaluation Organizations:														
Test Activities	Varies	Quarterly					0	0	414				0	414
Government Furnished Property Not applicable														
Project DC87										Exhibit R-3 (PE 0604816A)			Item 103	

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604816A Longbow

PROJECT

DC87

Total

Prior to

FY 1996

10

0

00

00

FY 1996

1538

1649

0

13187

FY 1997

3626

1709

414

5749

Budget to

Complete

Total

Program

1

1

Project DC87

Page 9 of 9 Pages

Exhibit R-3 (PE 0604816A)

1049

Item 103

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	23669	16411	19784	13379	9957	9912	10430	10472	Continuing	Continuing
D482 Combat Identification EMD	23669	13575	14773	7867	6956	6916	7439	7481	Continuing	Continuing
D901 All Service Combat ID Evaluation Team	0	2836	3003	3006	3001	2996	2991	2991	Continuing	Continuing
D902 Dismounted Soldier CID	0	0	2008	2506	0	0	0	0	0	4497

Mission Description and Budget Item Justification: The world situation and modern warfare are evolving in a manner that dictates making reliable identification of friends, foes, and neutrals an absolute necessity, but increasingly difficult to achieve. The ability of weapons systems to engage targets at ranges longer than the capability to positively identify them significantly increases the potential for fratricide. This Program Element (PE) is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. The projects within this PE are in the Engineering and Manufacturing Development (EMD) phase and the PE is correctly assigned in Budget Activity 5. Project D482 addresses the ground-to-ground vehicle mounted mission area, Project D901 addresses improvement of tactics, techniques and procedures across all mission areas, and Project D902 addresses the ground-to-ground dismounted mission area. Project D902 is a new start.

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &

D482

Manufacturing Development

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D482 Combat Identification EMD	23669	13575	14773	7867	6956	6916	7439	7481	Continuing	Continuing

A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is the lead Army horizontal technology initiative using the "A kit" (platform specific) and "B kit" (common to all platforms) philosophy. The program takes advantage of acquisition streamlining and directs industry to use commercial parts and practices to shorten acquisition timelines and to reduce cost. The purpose of BCIS is to reduce fratricide, a problem made increasingly difficult for gunners as we participate in coalition warfare where partners operate weapon systems formerly associated with adversaries. BCIS is a millimeter wave (mm W), ground-ground (G-G), point-of-engagement system which provides through-the-sight, day/night, all weather positive identification of BCIS equipped U.S., Allied and coalition platforms. Shooters query potential targets at ranges that can extend beyond 5 km. Friendly platforms targeted by friendly shooters generate automatic electronic responses in less than one second. BCIS is resistant to electronic countermeasures, active exploitation and deception. BCIS will be demonstrated during the Army Digitization Exercise, Task Force XXI. It will be used by combat, combat support, and combat services support units.

Acquisition Strategy: A competitive, cost plus award fee contract, for 45 EMD units and option quantities, was awarded Aug 93. Additional quantities have been procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include producibility engineering efforts that will lead to the Low Cost Design for the BCIS.

FY 1996 Accomplishments:

- 673 Completed technical and user testing.
- 14375 Completed hardware build for platform integration, and training/maintenance for TF XXI.
- 3812 Initiated producibility engineering design efforts.
- 3000 All Service Combat Identification Evaluation Team (ASCIET) Support.
- 1809 Completed hardware build for International Demonstration.
- Total 23669

FY 1997 Planned Program:

- 3359 Provide technical, integration, training and maintenance support for TF XXI experiment.
- 2225 Complete producibility engineering design effort.
- 5171 Initiate fabrication, assembly and test of Low Cost Producibility models.
- 2500 Develop/update system software for Low Rate Initial Production models.
- 320 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 13575

Project D482

Page 2 of 12 Pages

Exhibit R-2 (PE 0604817A)

1051

Item 104

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering & Manufacturing Development

D482

FY 1998 Planned Program:

- 450 Continue logistic support for BCIS leave behind systems.
- 1470 Complete fabrication and assembly of Low Cost Producibility models.
- 530 Conduct Interoperability Testing.
- 12323 Initiate fabrication, assembly and test LRIP systems for IOTE.
- Total 14773

FY 1999 Planned Program:

- 550 Continue logistic support for BCIS leave behind systems.
- 3578 Complete fabrication, assembly and test of IOTE hardware.
- 3000 Conduct government PPQT and IOTE.
- 739 Conduct MS III efforts and initiate request for proposal preparation.
- Total 7867

B. Project Change Summary

FY 1997 President's Budget Request
Appropriated Value
Adjustments to Appropriated Value
FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
21853	13886	9730	9752
22074	13575		
1595			
23669	13575	14773	7867

Change Summary Explanation:

Funding: Funding provided for additional BCIS units to support International Demonstration (FY 96 +1595) and IOT&E (FY 98 +5043).

C. Other Program Funding Summary: Work in this program element is related to and fully coordinated with efforts in PE 0602120 (Battlefield Ground Combat Identification Technology) and PE 0603772 (Ground Combat Identification Demonstration).

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total Cost
RDTE, A Budget Activity 2, PE 0602120A	3291	3604	3532	3552	3438	3584	3671	3769	continues	
Proj AH15 Ground Combat Identification Tech										
RDTE A, Budget Activity 3, PE 0603772A	6624	6897	3362	0	0	0	0	0	0	31454
Proj D281 Ground Combat ID Demo										

Project D482

Page 3 of 12 Pages

Exhibit R-2 (PE 0604817A)

1052

Item 104

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D482

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Completed technical and user testing	X*															
Completed hardware build for platform			X*													
integ, maint/training for TF XXI																
Initiate producibility engng design effort			X*													
Complete hardware build for Int'l Demo				X*												
Provide tech, integ, tng/maint for TF XXI																
Develop software including French wave-																
form and appliqué/DDL interface																
Complete producibility engng design effort						X										
Initiate fab, assay, test of LRIP models (35)						X										
Complete fab/assy of LRIP models (35)									X							
Continue TF XXI hardware support																
Conduct Interoperability Test										X						
Initiate fab, assay/test of IOTE hardware													X			
Complete fab, assay/test of IOTE hardware														X		
Conduct Platform Compatibility Demo															X	
Conduct PPQT/IOTE																X
Conduct MS III efforts and initiate RFP																
prep																

* Denotes Milestones completed

Project D482

Page 4 of 12 Pages

Exhibit R-2 (PE 0604817A)

1053

Item 104

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D482

A. Project Cost Breakdown
Primary Hardware Development
Platform Integration
System Engineering/Program Management Support
Government Contractor
Program Management Personnel
Development Test and Evaluation
Operational Test and Evaluation
ASCIET
SBIR/STTR
Total

FY 1996	FY 1997	FY 1998	FY 1999
14302	10027	12376	4090
2060		1212	
1280	1264	478	389
1454	1014	310	139
900	950	397	249
673			1250
			1750
3000			
	320		
23669	13575	14773	7867

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing Activity

Method/Type or Funding Vehicle

Award or Obligation Date

Performing Activity EAC

Project Office EAC

Total Prior to FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Product Development Organizations

TRW

GDLS

Misc.

Support and Management Organizations

Proj Management

CECOM

Test and Evaluation Organizations

TECOM

TEXCOM

ASCIET

SBIR/STTR

C/CPAF

SS/CPFF

MIPR

Multiple

MIPR

MIPR

MIPR

MIPR

MIPR

MIPR

69807

8715

3102

29012

6655

3102

29012

6655

3102

29012

69807

8715

3102

29012

6655

3102

29012

6655

3102

29012

14302

1560

500

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12376

500

712

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500

712

12376

4090

4090

4090

4090

4090

4090

4090

4090

4090

4090

69807

8715

4314

69807

8715

4314

69807

8715

4314

69807

12992

8687

3100

2423

3973

320

12992

8687

3100

2423

3973

320

Project D482

Page 5 of 12 Pages

Exhibit R-3 (PE 0604817A)

1054

Item 104

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering & Manufacturing Development

D482

Government Furnished Property: Not Applicable

	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Total						
Prior to						
FY 1996	38769	10027	13588	4090		82836
Subtotal Product Development	12855	3228	1185	777		21679
Subtotal Support and Management	2823	320		3000		9816
Subtotal Test and Evaluation	54447	13575	14773	7867		114331
Total Project						

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development								D901	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D901	All Service Combat ID Evaluation Team	0	2836	3003	3006	3001	2996	2991	2991	Continuing	Continuing
<p>A. Mission Description and Justification: All Service Combat Identification Evaluation Team (ASCIET) Support. ASCIET is an expanded effort aimed at fostering improved tactics, techniques, and procedures (TTP) across all combat identification mission areas. The Army, Navy, Air Force and Marine Corps are designated as the participating Services with the Air Force designated as the lead Service. ASCIET is chartered to employ the equipment and personnel of all Services to evaluate, investigate and assess various concepts of combat identification on the battlefield. ASCIET will also offer Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in multi-Service environment on a noninterference basis as a risk reduction and verification. ASCIET began in FY 95 as an effort to evaluate and revise joint TTP using current and new combat ID systems and technologies in a field environment. ASCIET was funded through Project D482. Restructuring was required because ASCIET is an independent effort from the BCIS EMD work.</p> <p>Acquisition Strategy: Not applicable</p> <p>FY 1996 Accomplishments: Funded through PE 0604817A</p> <p>FY 1997 Planned Program:</p> <ul style="list-style-type: none"> 43 Demonstrate situational awareness to BCIS through digital data link reporting to include friend indication, GPS location, unit ID, SINGGARS call sign/frequency. 1482 Demonstrate A-G target identification capability for rotary wing (OH-58D) platforms via SINGGARS SIP(+) radio and embedded GPS interface (EGI). 818 Demonstrate direct target ID capability for both fixed wing (AV-8B) and rotary wing (AH-64). 424 Demonstrate automated "nine line" message generation utilizing Automatic Target Hand-off System (ATHS) II data link to locate and identify targets for fixed wing aircraft. 69 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs. <p>Total 2836</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 750 Assess joint C3I interoperability. 750 Assess surface-air and air-air CI capabilities in joint environment. 1503 Evaluate surface-air, air-ground, ground-ground CI systems. <p>Total 3003</p>											

Project D901

Page 7 of 12 Pages

Exhibit R-2 (PE 0604817A)

1056

Item 104

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D901

FY 1999 Planned Program:

- 1506 Evaluate surface-air emerging technologies.
- 750 Continue assessing surface-air and air-ground capabilities in joint environment.
- 750 Continue joint C3I interoperability.

Total 3006

B. Project Change Summary:

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996

0

FY 1997

2897

2836

FY 1998

0

FY 1999

0

3006

Change Summary Explanation: Funding: FY98/FY99 - Funding provided to continue Army participation in ASCIET

C. Other Program Funding Summary: None

D. Schedule Profile

	1	2	3	4	1	2	3	4	1	2	3	4				
	FY 1996				FY 1997				FY 1998				FY 1999			
Conduct field test and demonstrations																
Assess joint C3I interoperability																
Assess surface-air, air-ground capabil.																
Evaluate surface-air, air-ground, ground-ground CI systems																
Evaluate surface-air emerging tech																
Continue evaluating surface-air, air-ground, ground-ground																
Continue joint C3I operability																

Project D901

Page 8 of 12 Pages

Exhibit R-2 (PE 0604817A)

1057

Item 104

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT

D901

[illegible]

Government Furnished Property: Not Applicable

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering & Manufacturing Development
D902

COST (in Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	0	0	2008	2506	0	0	0	0	0	4497

A. Mission Description and Justification: The Combat Identification System for the Dismounted Soldier (CIDDS) is a lightweight, laser-based, question and answer type system, used to positively identify friendly soldiers. The system includes a compact, eyesafe, diode laser interrogator; a laser detector assembly; an electronic processor unit; and an omni-directional RF responder. The laser transmitter also includes a near infrared aiming light for aiming the soldier's weapon at night when using Night Vision Goggles. The system will provide range of at least two kilometers under clear weather conditions and will exceed the soldier's target acquisition capability under degraded atmospheric conditions. It will have sufficient angular resolution to resolve individual targets, but not require precise pointing accuracy for robust response. The system will also be directly interoperable with the integrated soldier-to-soldier combat ID functions to be embedded in the Land Warrior equipment suite. The system will fulfill requirements stated in the Joint Service Operational Requirements Document for use by Army, Marine and Special Operations applications. This is not a new start, efforts were previously funded under PE 0602120A project AH15, Ground Combat Identification Technology.

Acquisition Strategy: A competitive, cost plus contract for delivery and testing of approximately 150 units for IOTE.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

- 509 Conduct best value proposal evaluation/Milestone II activities.
- 250 Conduct MS II Decision Review activities.
- 1249 Initiate Hardware/Software engineering design effort
- Total 2008

FY 1999 Planned Program:

- 1000 Complete hardware engineering design effort.
- 650 Complete special tooling/peculiar support equipment development.
- 856 Continue software engineering development/design effort.
- Total 2506

Project D902

Page 10 of 12 Pages

Exhibit R-2 (PE 0604817A)

1059

Item 104

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1997	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development			D902	
A. Project Cost Breakdown		FY 1996	FY 1997	FY 1998	FY 1999	
Primary Hardware Development				1839	2298	
System Engineering/Program Management Support						
Government				79	108	
Contractor				0		
Program Management Personnel				90	100	
Total				2008	2506	
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1996	Budget to Complete
Activity					FY 1997	FY 1998
Product Development Organization						
TBS	CPAF	3Q98	TBD	TBD		
Support and Management Organizations						
CECOM	MIPR					
Test and Evaluation Organizations: None						
Government Furnished Property: Not Applicable						
Subtotal Product Development					1848	2306
Subtotal Support and Management					160	200
Subtotal Test and Evaluation						
Total Project					2008	2506
</						

Project D902

Page 12 of 12 Pages

Exhibit R-3 (PE 0604817A)

1061

Item 104

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE		February 1997	
BUDGET ACTIVITY				PE NUMBER AND TITLE							
5 - Engineering and Manufacturing Development				0604818A Army Tactical Command and Control Hardware & Software							
COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	27231	15780	20022	18697	19717	19709	21910	22267	Continuing	Continuing	
DC34 Army Tactical C2 Systems (ATTCS) Engineering	19638	8159	7951	7790	8381	8349	8742	8978	Continuing	Continuing	
D323 Common Hardware Software (CHS)	7593	7621	12071	10907	11336	11360	13168	13289	Continuing	Continuing	

Mission Description and Budget Item Justification: The umbrella program to exploit automation technology for the conduct of combat operations is the Army Tactical Command and Control System (ATCCS) program which is a component of the Army Battle Command System (ABCS). The ATCCS program provides automation in the five battlefield functional areas (BFAs) with the following specific systems: (1) Maneuver Control System (MCS); (2) Advanced Field Artillery Tactical Data System (AFATDS); (3) All Source Analysis System (ASAS) for Intelligence/Electronic Warfare; (4) Forward Area Air Defense Command, Control and Intelligence System (FAADC2I); and (5) Combat Service Support Control System (CSSCS) and to other Army Joint and Allied systems. To provide an overall technically sound, cost effective, and operationally responsive approach, the design and development of ATCCS must be accomplished on a total systems basis. The ATCCS Engineering program provides the required systems engineering to assure integrated Army tactical command and control, and the utilization of common hardware and software throughout the five ATCCS nodal systems. The Common Hardware Software (CHS) project provides common hardware and software to customers to meet their developmental and fielding needs. The projects in this program element support the ATCCS programs which, for the most part, are in the engineering and manufacturing development phase of the acquisition process and, therefore, are correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604818A Army Tactical Command and Control
Hardware & Software

PROJECT

DC34

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC34 Army Tactical C2 Systems (ATCCS) Engineering	19638	8159	7951	7790	8381	8349	8742	8978	Continuing	Continuing

A. Mission Description and Justification: Project DC34 - Army Tactical C2 Systems (ATCCS) Engineering: The Air/Land and Battle Doctrine requires military leaders to make sound and timely command and control decisions to direct the activities of assigned and supporting units. The umbrella program to exploit automation technology in support of this mission is the ATCCS Program, a component of the ABCS. The effort to achieve horizontal integration of the ATCCS BFAs, although going on independently in each BFA, was not disciplined enough to address all connections and needs within the entire spectra of command, control and communications. Therefore, to ensure this horizontal integration effort is complete and automated, a significant management, systems engineering and integration effort is required.

Acquisition Strategy: This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, Ada software development, interoperability, fielding, and sustainment to assure an interoperable, affordable ATCCS. The Program Executive Officer Command, Control and Communications Systems (PEO C3S) has planned an evolutionary approach to fielding the ATCCS as soon as possible.

FY 1996 Accomplishments:

- 1560 Performed functional analysis and updated command post analysis to support ABCS and Army Warfighter Experiments (AWE)
- 867 Extended the ABCS data architecture and standardization program to additional functional areas
- 542 Continued the technology insertion program, e.g., advanced communication protocols, advanced networking, tactical decision aids, and distributed databases
- 6779 ABCS/Task Force XXI interoperability engineering and system level engineering support
- 487 Incorporated technology for Brigade and Below Command and Control (B2C2) applications into embedded applications
- 1842 Conducted/supported system configuration development/operational demonstrations in preparation for the MCS Limited User Test (LUT) and other BFA Operational Tests (OTs)
- 4322 Division XXI TOCs
- 3239 Division XXI system integration and interoperability
- Total 19638

FY 1997 Planned Program:

- 500 Perform functional analysis and update command post analysis to support ABCS and AWE
- 900 Implement the ABCS data architecture and standardization program in all Battlefield Functional Areas (BFAs) to facilitate Army Technical Architecture (ATA) compliance

Project DC34

Page 2 of 9 Pages

Exhibit R-2 (PE 0604818A)

1063

Item 105

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

DC34

FY 1997 Planned Program: (continued)

- 1245 Continue ABCS/AWE system level training and logistics development
- 3415 ABCS/AWE interoperability engineering and system level engineering support
- 1400 Conduct/support system configuration developmental/operational demonstrations in conjunction with MCS IOT&E and other BFA OTs
- 500 Develop the ABCS security architecture to support Division 2000
- 199 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 8159

FY 1998 Planned Program:

- 300 Perform functional analysis and update command post analysis to support ABCS and AWE
- 1250 Continue ABCS/AWE system level training and logistics development
- 3651 ABCS/AWE interoperability engineering and system level engineering support/performance dependency analyses and validation of all BFA fielded software, including common and unique applications
- 1450 Conduct and support system configuration developmental/operational demonstrations in conjunction with BFA OTs and AWEs
- 500 Develop and Implement the ABCS security architecture
- 800 Implement the ABCS data architecture and standardization program to all Battlefield Functional Areas to facilitate ATA compliance
- Total 7951

FY 1999 Planned Program:

- 300 Perform functional analysis and update command post analysis to support ABCS
- 1200 Continue the ABCS system level training and logistics development
- 3540 ABCS interoperability engineering and system level eng support/performance dependency analyses and verification and validation of all BFA fielded software, including common and unique applications
- 1450 Conduct and support system configuration developmental/operational demonstrations in conjunction with BFA OTs
- 800 Implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance
- 500 Develop and Implement ABCS security architecture
- Total 7790

Project DC34

Page 3 of 9 Pages

Exhibit R-2 (PE 0604818A)

1064

Item 105

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1997	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			DC34
5 - Engineering and Manufacturing Development	0604818A Army Tactical Command and Control Hardware & Software			
B. Project Change Summary				
FY 1997 President's Budget	FY 1996	FY 1997	FY 1998	FY 1999
Appropriated Value	10408	8645	8579	8460
Adjustments to Appropriated Value	10513	8159		
FY 1998 Pres Bud Request	9125		7951	7790
19638				
Change Summary Explanation:				
Funding: FY 96 increased (+6389) to support the Division XXI requirements for Systems Engineering, Integration, and Interoperability (+2736) and hardware for the Tactical Operations Centers (TOCs).				
C. Other Program Funding Summary: Not Applicable				
D. Schedule Profile				
Finalize Objective ATCCS specification	1	2	3	4
ATCCS System Confidence Demo-6				
ATCCS V1 Operational Test & Evaluation				
Participate in Task Force XXI AWE				
ATCCS System Confidence Demo-7				
Participate in Division XXI AWE				
ATCCS Log Maint Demo				
ATCCS System Confidence Demo-8				
ATCCS Log Maint Demo				
ATCCS System Confidence Demo-9				

Project DC34

Page 4 of 9 Pages

Exhibit R-2 (PE 0604818A)

1065

Item 105

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1997

PE NUMBER AND TITLE

**PROJECT
DC34**

0604818A Army Tactical Command and Control Hardware & Software

	FY 1996	FY 1997	FY 1998	FY 1999
--	---------	---------	---------	---------

7790

199

199

7951

7951

Project	Total
1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100
11	100
12	100
13	100
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99	100
100	100

Project	Office	Prior to	Return
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

Category	FY 1996
EAC	

604

7657
7656

7507

4864

3683

2925

2229

813

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19638

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19638

Page 5 of 9 Pages

Exhibit R-3 (PE 0604818A)

Item 105

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

D323

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D323 Common Hardware Software (CHS)	7593	7621	12071	10907	11336	11360	13168	13289	Continuing	Continuing

A. Mission Description and Justification: Project D323 Common Hardware Software (CHS): CHS is the program through which the Army builds its integrated efforts for tying together the Army Command and Control Systems. The project provides vehicles (contracts) through which customers can acquire state-of-the-art common hardware/software and associated peripherals to meet developmental and fielding needs. The project also provides software technology support and command post internal structures within shelters. The common software supports Army, other Services and Joint systems. The CHS program is instrumental in digitizing the battlefield.

Acquisition Strategy: The overall goal is to improve interoperability and lower life cycle costs by standardizing Battlefield Command and Control (C2) automation through centralized buys of non-developmental items (NDI), standardized protocols and reusable software. Four NDI hardware versions are available to meet specific needs of each Battlefield Functional Area (BFA): handheld, portable, transportable and lightweight computer unit.

FY 1996 Accomplishments:

- 2589 Continued management of the acquisition and delivery of CHS equipment (LCU/CHS-1/CHS-2) in support of customer requirements
- 3639 Continued execution of common hardware and common software reuse programs
- 905 Continued testing CHS-2 equipment (User Confidence Test, Reliability, First Article Test). Manage total testing program in support of customer requirements
- 460 Continued exploring state of the art technology insertion in support of ABCS
- Total 7593

FY 1997 Planned Program:

- 2655 Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
- 3704 Continue execution of common hardware, software technology and command post programs
- 467 Continue supporting customers testing efforts with CHS equipment
- 650 Continue exploring state of the art technology insertion in support of ABCS
- 145 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
- Total 7621

Project D323

Page 6 of 9 Pages

Exhibit R-2 (PE 0604818A)

1067

Item 105

UNCLASSIFIED

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

PROJECT

D323

FY 1998 Planned Program:

- 2651 Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
- 3697 Continue execution of common hardware, software technology and software reuse programs
- 469 Continue supporting customers testing efforts with CHS equipment
- 695 Continue the exploration of state of the art technology insertion in support of ABCS programs
- 4559 Develop, integrate and upgrade Army Common Operating Environment (COE) products, technology insertion and Command Control Vehicle (C2V) interoperability upgrade and testing

Total 12071

FY 1999 Planned Program:

- 2599 Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements
- 3499 Continue execution of common hardware, software technology and software reuse programs
- 450 Continue supporting customers testing efforts with CHS equipment
- 695 Continue exploring state of the art technology insertion in support of ABCS programs
- 3664 Continue developing, integrating and upgrading Army COE products, technology insertion and C2V interoperability upgrade and testing

Total 10907

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 Pres Bud Request

FY 1996	FY 1997	FY 1998	FY 1999
7755	7784	7730	7627
7833	7621		
-240			
7593	7621	12071	10907

Change Summary Explanation:

Funding: FY 98/FY99: Funds realigned to this project to support development of Common Operating Environment (COE) software essential to implement the Army Technical Architecture (ATA) Migration plans and digitization efforts (FY 98 +4341, FY 99 +3280)

C. Other Program Funding Summary: Not Applicable

Project D323

Page 7 of 9 Pages

Exhibit R-2 (PE 0604818A)

1068

Item 105

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

D323

D. Schedule Profile

	FY 1996			FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1	2	3	4
CHS-2 Production Delivery V-2/V3 Start												
Last LCU orders processed		X*										
Last CHS-1 orders processed												
CHS-2 Technology Insertion (continuous)					X				X	X	X	X

*Milestone Complete

Project D323

Page 8 of 9 Pages

Exhibit R-2 (PE 0604818A)

1069

Item 105

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

PROJECT

D323

A. Project Cost Breakdown													
Program Management Personnel	FY 1996	FY 1997	FY 1998	FY 1999									
	4595	4626	4870	4805									
Contract Engineering Support	2998	2850	7201	6102									
SBIR/STTR		145											
Total	7593	7621	12071	10907									
B. Budget Acquisition History and Planning Information													
Performing Organizations													
Contractor or													
Government													
Performing													
Activity													
Method/Type													
or Funding													
Vehicle													
Award or													
Obligation													
Date													
Performing													
Activity													
EAC													
Product Development Organizations													
Matrix-CECOM													
Misc. Contracts													
SBIR/STTR													
Support and Management Organizations													
In-House (CHS)													
Test and Evaluation Organizations													
None													
Government Furnished Property: None													
Subtotal Product Development													
Subtotal Support and Management													
Subtotal Test and Evaluation													
Total Project													

Project D323

Page 9 of 9 Pages

Exhibit R-3 (PE 0604818A)

1070

Item 105

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604820A Radar Development

DE10

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE10 FAAD Ground Based Sensor	500	0	0	0	6064	9535	9229	0	0	25328

A. Mission Description and Budget Item Justification: The Forward Area Air Defense Ground Based Sensor (FAAD GBS), AN/MPQ-64, consists of a radar-based sensor with its prime mover/power, identification friend or foe (IFF), and FAAD Command, Control, and Intelligence (C2I) interfaces. The sensor is an advanced three dimensional battlefield X-Band air defense phased-array radar with an instrumented range of 40 km. The FAAD GBS is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke, aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition tracking. The FAAD GBS contributes to the digital battlefield by automatically detecting, classifying, identifying, and reporting targets [cruise missiles, and unmanned aerial vehicles (UAV's), rotary wing and fixed wing aircraft]. Targets can be hovering to fast moving, as well as, from nap of the earth to the maximum engagement altitude of FAAD weapons. Very accurate and quick reacting, FAAD GBS acquires targets sufficiently forward of the Forward Line of Troops to improve FAAD weapon reaction time and allow engagement at optimum ranges. The FAAD GBS integrated IFF reduces the potential for fratricide of Army Aviation and Air Force aircraft. Highly mobile and reliable, the FAAD GBS Anti-Radiation Missile and Electronic Countermeasures resistant performance support Army Corps and Divisional Air Defense operations across the full spectrum of conflict. This project is related to an engineering and manufacturing development program and is therefore correctly placed in BA 5.

Acquisition Strategy: The FAAD GBS pre-production contract was awarded on a competitive best value basis with options for Low Rate Initial Production and Full Rate Production.

FY 1996 Accomplishments:

- 500 Completed reliability testing

Total 500

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

Project DE10

Page 1 of 3 Pages

Exhibit R-2 (PE 0604820A)

1071

Item 106

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

0604820A Radar Development

DE10

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Exhibit R-2 (PE 0604820A)

1072

UNCLASSIFIED

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604820A Radar Development

DE10

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test Support	500			
Total	500			

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes Aircraft Company	C/FFP	Feb 92	56836	56836	56836					17128	73964
MICOM	MIPR				18704						18704
Other/Misc.	MIPR				5270						5270
Support and Management Organizations											
MICOM	MIPR				20125					1919	22044
Other/Misc.	MIPR				1707						1707
Test and Evaluation Organizations											
OPTEC	MIPR				24180						24180
Other/Misc.	MIPR				7703						7703
TECOM	MIPR				1133	500				5781	7414
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					80810					17128	97938
					21832					1919	23751
					33016	500				5781	39297
					135658	500				24828	160986

Project DE10

Page 3 of 3 Pages

Exhibit R-3 (PE 0604820A)

1073

Item 106

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604823A Firefinder								DL85	
COST (In Thousands)		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL85	Firefinder Pre-Planned Product Improvement	0	2496	2564	12022	23248	24000	5788	0	0	70118

A. Mission Description and Budget Item Justification: The Firefinder Pre-Planned Product Improvement (P3I) program will upgrade the AN/TPQ-37 Artillery Locating Radar by replacing the Antenna Transceiver Group (ATG). This upgrade is in response to the approved Mission Need Statement (MNS) for the Advanced Firefinder System which describes an urgent need for a more survivable, longer range and less manpower intensive radar. An Operational Requirements Document (ORD) for Firefinder AN/TPQ-37 (Block II) Pre-Planned Product Improvement (P3I) was approved 25 Sep 96. This upgrade will double the current range performance and improve the target throughput to 50 targets per minute in a highly mobile, transportable and survivable system. The Firefinder P3I will also be capable of missile detection at maximum ranges of 150-300 km and will be capable of interfacing with Theater Missile Defense Systems. The system will be capable of C-130 roll-on/roll-off transportability for rapid deployment. Crew size will be reduced. This program will also leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same modern shelter and radar signal processor. The Firefinder P3I will be integrated into the targeting structure by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS). A new PE/Project beginning in FY 97 was established for this Materiel Change (MC). This MC will be in the Engineering and Manufacturing Development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: A replacement for the Antenna Transceiver Group will be developed as an upgrade to the AN/TPQ-37 on a competitive basis.

FY 1996 Accomplishments: Project not funded in FY96.

FY 1997 Planned Program:

- 700 Award multiple study contracts for evaluation of program risks and cost/performance trade-offs
- 378 Prepare program and cost documentation to support a Milestone II decision
- 476 Prepare and release draft solicitation for industry comment
- 159 Finalize and issue solicitation to award an EMD contract in FY 98
- 285 Conduct Integrated Process Team (IPT) with industry to finalize system specification
- 437 Prepare Analysis of Alternatives (AOA) and Threat Analysis
- 61 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2496

Project DL85

Page 1 of 5 Pages

Exhibit R-2 (PE 0604823A)

1074

Item 107

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1997

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604823A Firefinder

PROJECT

DL85

FY 1998 Planned Program:

- | | | |
|---|------|---|
| • | 384 | Conduct Source Selection Evaluation Board (SSEB) |
| • | 1956 | Award EMD contract and initiate hardware/software design of new ATG |
| • | 224 | Conduct hardware Preliminary Design Review (PDR) |
| | 2564 | |
| | | Total |

FY 1999 Planned Program:

- | | | |
|---|-------|--|
| • | 1790 | Complete hardware design |
| • | 287 | Conduct Critical Design Review (CDR) |
| • | 8922 | Begin prototype fabrication |
| • | 1023 | Integrate the AN/TPQ-36(V)8 Electronics Shelter with new ATG |
| | 12022 | |
| | | Total |

B. Project Change Summary

**FY 1997 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1998/Pres Bud Request**

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
0	551	2839	13234
0	2496		
0			
0	2496	2564	12022

C. Other Program Funding Summary

Other Procurement, Army 2
SSN: BA5100 Firefinder P3I

<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u> <u>Compl</u>	<u>Total</u> <u>Cost</u>
					67455	97084	129312	458000	751851

D. Schedule Profile

Conduct IPTs

Award BAA contracts

Prepare Analysis of Alternatives (AOA)

Prepare and release draft solicitation

Finalize and issue solicitation for EMD

FY98 award

Complete documentation for Milestone II

Obtain Milestone II Approval

	FY 1996			FY 1997
1	2	3	4	1
				2
			X	3
				X
				X
				X

X X X

Project DL85

Page 2 of 5 Pages

Exhibit R-2 (PE 0604823A)

Item 107

1075

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY						DATE		PROJECT	
5 - Engineering and Manufacturing Development						February 1997		DL85	
D. Schedule Profile						PE NUMBER AND TITLE			
						0604823A Firefinder			
						FY 1997		FY 1998	
						FY 1996		FY 1999	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604823A Firefinder

PROJECT

DL85

FY 1996

FY 1997

FY 1998

FY 1999

A. Project Cost Breakdown
 Specification/Technical Parameters Development
 Primary Hardware Development
 System Engineering
 Government
 Contractor
 Source Selection Evaluation Board
 Program Management Personnel
 SBIR/STTR
 Total

1422

1796

11057

663

168

369

150

80

156

384

384

440

200

136

440

61

2564

12022

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contract
 Government
 Performing
 Activity

Method/Type
 or Funding
 Vehicle

Award or
 Obligation
 Date

Performing
 Activity
 EAC

Project
 Office
 EAC

Total
 Prior to
 FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to
 Complete

Total
 Program

Product Development Organizations

TBD
 Misc.
 CECOM
 SSEB

C/CPIF
 BAA/FFP
 MIPR
 MIPR

Mar 98
 Jan 97

57080
 700
 384

700
 722

1796
 384

11057
 0

57080
 700
 722
 384

Support and Management Organizations

Misc.
 CECOM
 SBIR/STTR

MIPR
 MIPR

150
 863
 61

596
 369

2643
 1620

3605
 3020
 61

Test and Evaluation Organizations

White Sands
 Yuma
 Misc.

MIPR
 MIPR
 MIPR

2113
 1410
 1273

Government Furnished Property: Not Applicable

Project DL85

Page 4 of 5 Pages

Exhibit R-3 (PE 0604823A)

1077

Item 107

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604823A Firefinder

PROJECT

DL85

5 - Engineering and Manufacturing Development

Total

Prior to
FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to
CompleteTotal
Program

Subtotal Product Development
 Subtotal Support and Management
 Subtotal Test and Evaluation
 Total Project

1422	2180	11057	44227	58886
1074	384	965	4263	6686
2496	2564	12022	4796	4796
			53286	70368

Project DL85

Page 5 of 5 Pages

Exhibit R-3 (PE 0604823A)

1078

Item 107

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1997
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604854A Artillery Systems - Engineering Development									
		FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	COST (In Thousands)										
	Total Program Element (PE) Cost	0	2937	0	897	313993	437444	434029	206133	Continuing	Continuing
D503	Crusader - ED	0	0	0	0	311211	434690	433920	202648	Continuing	Continuing
D509	ATCAS	0	2937	0	398	1626	2647	0	0	0	7608
D2KT	Crusader Operational Test	0	0	0	499	1156	107	109	3485	Continuing	Continuing
<p>Mission Description and Budget Item Justification: This new program element supports the engineering and manufacturing development efforts for the Crusader-ED program and Advanced Field Artillery System Operational Test. This element also supports the Advanced Towed Cannon Artillery System (ATCAS). The projects in this program support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D509

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D509 ATCAS	0	2937	0	398	1626	2647	0	0	0	7608

A. Mission Description and Justification: Advanced Towed Cannon Artillery System (ATCAS) will provide the replacement for the M198 155mm Howitzer and achieve significant strategic and tactical mobility improvements. This is a joint program with the Marine Corps as the lead service funding the development of the basic howitzer. The Army will fund the research and development of the product improvements to include: Inertial Navigation System, Electric Drives for Automated Elevation and Deflection Control, a Semi-Automated Loader, Laser Ignition System and Digital Direct Fire Sight.

Acquisition Strategy: To develop and integrate the product improvements on the USMC-developed howitzer. Development will be primarily by subcontract, while integration is expected to be done by the howitzer prime contractor. The development of the digital fire control will leverage the demonstration hardware developed as part of the Rapid Force Projection Initiative (RFPI) program and software developed by PM Paladin.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program:

- 1000 Perform P3I integration efforts on to the LW155 EMD Howitzer
- 400 Continue engineering efforts to incorporate the laser ignition system in the towed platform
- 915 Create LW towed howitzer and P3I component simulations to reduce technical risk and evaluate engineering change proposals
- 550 Conduct a 52Caliber trade-off study to determine cost, weight, reliability tradeoffs if a 52cal cannon assembly were applied to the LW155 Howitzer
- 72 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 2937

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 398 Initiate integrated Early User Test /Engineering Development
- Total 398

Project D509

Page 2 of 7 Pages

Exhibit R-2 (PE 0604854A)

1080

Item 108

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering

D509

Development

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 President's Budget Request

FY 1996
0FY 1997
0

2937

FY 1998
0

412

FY 1999
412

398

Change Summary Explanation: Funding: FY 1997(+2937) Congressional increase to support the joint of LW155 Howitzer Program.

C. Other Program Funding Summary

RDTE, Marine Corps, PE 060635, C2112

Procurement Marine Corps, BLIN 218500

Procurement, Army WTCV, SSN G01700

FY 1996
14,392FY 1997
13,269FY 1998
35,303FY 1999
33,915FY 2000
8,624FY 2001
148,435FY 2002
142,081FY 2003
142,034

71,558

745,077

745,077

D. Schedule Profile

P3I Integration Efforts on the LW155

Perform Laser Ignition Integration

Initiate/Develop Component Simulations

Conduct Trade off Study

Initiate Evaluation of Automated FC

1

FY 1996
2FY 1997
4FY 1998
2FY 1999
3FY 2000
4FY 2001
1FY 2002
4FY 2003
3

Project D509

Page 3 of 7 Pages

Exhibit R-2 (PE 0604854A)

1081

Item 108

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering

D509

Development

A. Project Cost Breakdown

Government Engineering Support

Contractor Engineering Support

Program Management Support

SBIR/STTR

Total

FY 1996

FY 1997

FY 1998

FY 1999

1,365

1,400

100

72

2937

298

100

398

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Method/Type

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Total

Product Development Organizations

ARDEC-Picatinny

1095

Feb 97

TBD

0

885

298

773

1956

0

550

550

0

1330

3,400

4730

72

72

300

300

7608

Support and Management Organizations

PM-JLW

Feb 97

TBD

0

100

100

100

100

0

2937

298

4173

7308

0

100

100

300

300

7608

Test and Evaluation Organizations

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

None

Project D509

Page 4 of 7 Pages

Exhibit R-3 (PE 0604854A)

1082

Item 108

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D2KT

COST (In Thousands)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2KT Crusader Operational Test	0	0	0	499	1156	107	109	3485	Continuing	Continuing

A. Mission Description and Justification: Project D2KT Crusader Operational Test: Crusader operational testing will be conducted to answer issues relating to system effectiveness and suitability. Testing will be accomplished initially at section level (howitzer crew) and progress to battery and battalion levels to determine overall mission effectiveness and force structure suitability.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 499 Initiate integrated Early User Test/Engineering Development Tests.

Total 499

B. Project Change Summary

FY 1997 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1998 President's Budget Request

FY 1996	FY 1997	FY 1998	FY 1999
0	0	0	499
0	0	0	499

Project D2KT

Page 5 of 7 Pages

Exhibit R-2 (PE 0604854A)

1083

Item 108

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D2KT

C. Other Program Funding Summary

RDTE A, Budget Activity 4,
 PE 0603645, Project D409 AFAS
 PE 0603645, Project DB88 FARV
 PE 0603854, Project D505 Crusader - AD
RDTE A, Budget Activity 5,
 PE 0604854, Project D503 Crusader - EMD

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	135724									546347
	45923									127370
		235795	322291	293920	47102					899108
					311211	434690	433920	202648	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
1	2	3	4	1
	2	3	4	1
				2
				3
				4
				X

Initiate combined Early Developmental
 Testing/Early User Testing

Project D2KT

Page 6 of 7 Pages

Exhibit R-2 (PE 0604854A)

1084

Item 108

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1997

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D2KT

A. Project Cost Breakdown

Product Development

Support and Management

Test and Evaluation

Total

FY 1996

FY 1997

FY 1998

FY 1999

499

499

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or

Government

Performing

Activity

Contract

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1996

FY 1996

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Product Development Organizations: None

Support and Management Organizations: None

Test and Evaluation Organizations

TECOM, YPG,

AZ, CSTA, APG,

MD, Ft. Sill, OK,

OPTEC, VA

499

Cont

Cont

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

499

Cont

Cont

499

Cont

Cont

Project D2KT

Page 7 of 7 Pages

Exhibit R-3 (PE 0604854A)

1085

Item 108

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1	USD (Policy), Pentagon, Room 4B926, Washington, DC 20301-2100
1	DOD Compt, MS, DMI, Pentagon, Room 1B728, Washington, DC 20310-1100
1	OSD, ATTN: DOT&E, Pentagon, Room 3E318, Washington, DC 20310
11	ASD(C3I), Pentagon, Room 3E209, Washington, DC 20310
1	ASD(ISA), Pentagon, Room 4B938, Washington, DC 20310
1	ASD(LA), Pentagon, Room 3D918, Washington, DC 20310
1	USD(P&R), Room 3C980, Washington, DC 20310-4000
1	ASD(PA&E)/GPP/LFD, Pentagon, Room 2B256, Washington, DC 20310
1	ASD(PA&E), Pentagon, Room 2E313, Washington, DC 20310
2	ASD(PA), Pentagon, Room 2D278, Washington, DC 20310
2	JCS(J-8), Pentagon, Room 1E963, Washington, DC 20310
1	HQDA (SAUS-OR), Pentagon, Room 2E600, Washington, DC 20310
*	HQDA (SAILE), Pentagon, Room 2E614, Washington, DC 20310
*	HQDA (SARD-DEP), Pentagon, Room 2E673, Washington, DC 20310
*	HQDA (SAFM-CAZ-A), 5611 Columbia Pike, Falls Church, VA 22041-5050
*	HQDA (SFIS-API), Hoffman 1, Room 1012, Alexandria, VA 22331-0302
*	HQDA (DACS-DPD), Pentagon, Room 3C738, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 1C460, Washington, DC 20310
*	HQDA (SAIS-PPG), Pentagon, Room 1D679, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 3C747, Washington, DC 20310
*	HQDA (DACS-DMC), Pentagon, Room 3D631, Washington, DC 20310
1	HQDA (DACS-TE), Pentagon, Room 3C571, Washington, DC 20310

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*	HQDA (DAMI-ZXM), Pentagon, Room 2D474, Washington, DC 20310
1	HQDA (DAMI-PBB), Pentagon, Room 2E477, Washington, DC 20310
*	HQDA (DAPE-ZXO), Pentagon, Room 2D735, Washington, DC 20310
*	HQDA (DALO-RMP), Pentagon, Room 1E565, Washington, DC 20310
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*	HQDA (DAMO-ZR), Pentagon, Room 3D526, Washington, DC 20310
*	HQDA (DAMO-FDR), Pentagon, Room 2D570, Washington, DC 20310
*	HQDA (DAAR-CO), Pentagon, Room 1D432, Washington, DC 20310
*	HQDA (NGB-ZA), Pentagon, Room 2E394, Washington, DC 20310
*	HQDA (DASG-ZA), 5111 Leesburg Pike, Room 638, Falls Church, VA 22041-3258
*	HQDA (DASG-RMZ), 5111 Leesburg Pike, Room 554, Falls Church, VA 22041-3258
*	HQDA (DASG-RDZ), Pentagon, Room 3E368, Washington, DC 20310-2300
*	HQDA (DAIM-ED), Pentagon, Room 1E682, Washington, DC 20310
*	HQDA (DAIM) Pentagon, Room 1E665, Washington, DC 20310
*	HQDA (SAPA), Pentagon, Room 2E641, Washington, DC 20310
*	HQDA (CSSD-RM-W), P.O. Box 15280, Arlington, VA 22215-0150
*	HQDA (SAAG-PRP), Room 1309, 3101 Park Center Drive, Alexandria, VA 22302-1596
*	HQDA (DAMH-ZB), Pulaski Bldg, Room 4229, 20 Massachusetts Avenue, Washington, DC 20314
*	US Army Cost And Economic Analysis Center, ATTN: SFFM-CA-PI, 5611 Columbia Pike, Falls Church, VA 22041-5050
1	BMDO/RM, Pentagon, Room 1E1037, Washington, DC 20310
*	HQDA, (JDRS-PBD), Pentagon, Room 1E610, Washington, DC 20310

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* Commander, US Army Intelligence and Security Command, ATTN: IARM-PB, Fort Belvoir, VA 22060-5370
* Commander, US Army Nuclear and Chemical Agency, ATTN: MONA-OPS, Bldg 2073, Backlick Road, Springfield, VA 22150
* Commander, US Army Medical R&D Command, ATTN: SGRD-RMC, Fort Detrick, Frederick, MD 21701-5012
* Commander, US Army Medical R&D Command, ATTN: SGRD-PR, Fort Detrick, Frederick, MD 21701-5012
* Commander, US Army Training and Doctrine Command, ATTN: ATCD-E, Fort Monroe, VA 23651-5000
* CMTD, Army Field Artillery School, ATTN: ATSF-CSI-P, ATSF-CBL, Ft. Sill, OK 73503-5600
* CDR, Army Aviation Ctr & Ft. Rucker, ATTN: ATZS-CDI, Ft. Rucker, AL 36362-5000
* CDR, Army Intelligence Ctr and FT. Huachuca, ATTN: ATZS-CDI-I, ATZS-CDT, Ft. Huachuca, AZ 85613-7000
* CMTD, U.S. Army Signal Ctr, ATTN: ATZH-CDM, ATZH-BLT, Ft. Gordon, GA 30905-5000
* Force Design Directorate, ATTN: ATCD-F, 415 Sherman Ave., Ft. Leavenworth, KS 66027-5000
* CDR, USACHCS, ATTN: ATSC-CD, Ft. Monmouth, NJ 07703-5612
* CDR, U.S. Army Medical Center & School, ATTN: HSMC-FCM, Ft. Sam Houston, TX 78234
* CMTD, U.S. Army Air Defense Artillery School, ATTN: ATSA-CDM, Ft. Bliss, TX 79916
* CMTD, U.S. Army Infantry School, ATTN: ATSH-IWC, ATSH-MLS, Ft. Benning, GA 31905-5400
* CMTD, U.S. Army Armor School, ATTN: ATZK-CD-ML, ATZK-MW, Ft. Knox, KY 40121-5200
* CMTD, U.S. Army Engineer School, ATTN: ATSE-CD-M, Ft. Leonard Wood, MO 65473-5000
* CMTD, U.S. Army Chemical School, ATTN: ATZN-CM-CS, Ft. McClellan, AL 36205-5020
* CMTD, U.S. Army Military Police School, ATTN: ATZN-MP-CM, Ft. McClellan, AL 36205-5020
* Commander, US Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-MB, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600
* Commander, US Army Operational Test and Evaluation Command, ATTN: CSTE-RMZ, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22302-1458

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*	Commander, US Army Materiel Command, ATTN: AMCAE-P, 5001 Eisenhower Avenue, Alexandria, VA 22333
*	Commander, US Army Materiel Command, ATTN: AMCAQ-B-TILO, 5001 Eisenhower Avenue, Alexandria, VA 22333
*	Commander, US Army Communications-Electronics Command, ATTN: AMSEL-CG, Ft. Monmouth, NJ 07703-5000
*	Commander, US Army Communication-Electronics Command, ATTN: AMSEL-ACSB-BT, Ft. Monmouth, NJ 07703-5008
*	Commander, US Army Missile Command, ATTN: AMSMI-AS (Library), Bldg 5250, RMC-147, Redstone Arsenal, AL 35898-5000
*	Commander, US Army Test and Evaluation Command, ATTN: AMSTE-RM, Aberdeen Proving Ground, MD 21005-5055
*	Commander, US Army CECOM, Technical Industrial Liaison Office, ATTN: AMSEL-AC-SP-BL (Sandra Vermont), Ft. Monmouth, NJ 07703-5008
*	Commander, US Army Tank-Automotive Command, ATTN: AMSTA-CG, Warren, MI 48397-5000
*	Commander, US Army Laboratory Command, ATTN: AMSLC-CG, Adelphi, MD 20783-1145
*	Commander, US Army Armament Research, Development and Engineering Center, ATTN: SMCAR-CO, Dover, NJ 07806-5000
*	Commander, Environmental Center, ATTN: SFIM-AEC-RM, Edgewood Area, Aberdeen Proving Ground, MD 21010-5055
*	Commander, US Army Materiel Systems Analysis Activity, ATTN: AMXSY-PB, Aberdeen Proving Ground, MD 21005-5071
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-RR, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: SCBRD-ASA, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-EO, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Aviation and Troop Command, ATTN: AMSAT-D-C, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798
*	Program Manager, Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS, 12350 Research Parkway, Orlando, FL 32826
*	Program Manager, Tank Main Armament Systems, ATTN: AMCPM-TMD PMD, Picatinny Arsenal NJ 07806-5000
*	Program Executive Officer, Missile Defense, ATTN: SFAE-MD-DP-P, Building 5250, Redstone Arsenal, Alabama 35898-5750
*	Program Executive Officer, Field Artillery Systems, ATTN: SFAE-FAS, Building 171, Picatinny Arsenal, Picatinny, NJ 07806-5000

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*	Program Executive Officer, Aviation, ATTN: SFAE-AV, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798
*	Program Executive Officer, Tactical Wheeled Vehicles, ATTN: SFAE-TWV, Warren, MI 48397-5000
*	Program Executive Officer, Command and Control Systems, ATTN: SFAE-CC-PMO, Ft. Monmouth, NJ 07703-5000
*	Program Executive Officer, Communication Systems, ATTN: SFAE-COM, Ft. Monmouth, NJ 07703-5000
*	Program Executive Officer, Tactical Missiles, ATTN: SFAE-MSL, Redstone Arsenal, AL 35898-8000
*	Program Executive Officer, Intelligence and Electronic Warfare, ATTN: SFAE-IEW-BM, Ft. Monmouth, NJ 07703
*	Commander, US Army Space and Strategic Defense Command, ATTN: CSSD-RM-BP, P.O. Box 1500, Huntsville, AL 35807-3801
*	Commander, US Army Corps of Engineers, ATTN: CERD-L, Washington, DC 20314
*	Commander, US Army Force Integration Support Agency, ATTN: MOFI-TRED-O, Building 2588, Fort Belvoir, VA 22060-5587
*	Commander, 902d MI Group, ATTN: IAGPA-OPOP, Ft. Meade, MD 20755-5910
*	Commander, HQ US Army Missile & Space Intelligence Center, ATTN: AIAMS-YCC, Redstone Arsenal, AL 35898-5000
*	Commander, US Army Countermeasures/Counter Counter Measures Center, ATTN: AMX-CM-RF, 2800 Powder Mill Rd, Adelphi, MD 20
*	Commander, US Army Belvoir Research, Development & Engineering Center, ATTN: STRBE-Z, Ft. Belvoir, VA 22060-5606
*	Commander, US Army Research Office, ATTN: SLCRO-AO (Security Officer), P.O. Box 12211, Research Triangle Park, NC 27709
3	Executive Office of the President, Office of Management and Budget, National Security Division, NEOB, Room 10001, Washington, DC 20503
1	Inspector General, ATTN: A&IM/FMD, 400 Army-Navy Drive Arlington, VA 22202-2884
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